

Decision **ALTERNATE PROPOSED DECISION OF COMMISSIONER
LYNCH (Mailed 9/16/2003)**

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of Pacific Gas and Electric Company
in its 2002 Nuclear Decommissioning Cost
Triennial Proceeding.

(U 39 E)

Application 02-03-020
(Filed March 15, 2002)

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O P I N I O N**I. Summary**

The purpose of this nuclear decommissioning cost triennial proceeding (NDCTP) is to set the annual revenue requirements for the decommissioning trusts for nuclear power plants owned by Pacific Gas and Electric Company (PG&E).

For 2003, PG&E requests an annual revenue requirement of \$24.034 million for decommissioning Diablo Canyon Power Plant Units 1 and 2 (Diablo Canyon). PG&E also requests an annual revenue requirement of \$17.511 million for decommissioning Humboldt Bay Power Plant Unit 3 (Humboldt). In addition, PG&E requests \$8.254 million for Humboldt SAFESTOR O&M.¹ The resulting requested annual revenue requirement is \$49.799 million.

By this decision, we find that the trust funds for Diablo Canyon and Humboldt are sufficient to pay for their eventual decommissioning. The primary reasons for the differences between the requested and adopted numbers are different adopted rates of return for the trusts, cost escalation rates, contingency factors, and low level radioactive waste (LLRW) burial costs. We also grant PG&E's request for a revenue requirement of \$8.254 million for Humboldt SAFESTOR O&M. The total adopted annual revenue requirement of \$8.254 million is a \$22.9 million decrease from the currently adopted revenue requirement of \$31.2 million.

¹ SAFESTOR is a decommissioning alternative in which the nuclear facility is placed and maintained in a condition that allows it to be safely stored and subsequently decontaminated. O&M stands for operations and maintenance expenses.

In addition to the above revenue requirement, we find that the \$0.95 million expenditure for Humboldt decommissioning costs incurred above the \$15.7 million authorized in Resolution E-3503 was reasonable, and authorize PG&E to recover the costs from the Humboldt decommissioning cost trusts. We also order the \$3.5 million and \$3.85 million Humboldt decommissioning projects authorized in Resolution E-3737 to be reviewed for reasonableness in the next NDCTP, after they have been completed.

II. Background

Application (A.) 02-03-039 is the application of Southern California Edison Company (SCE) and San Diego Gas and Electric Company (SDG&E) for their 2002 NDCTP. Combined hearings were held for both the instant application and A.03-03-039, although the proceedings were not consolidated. The purpose of the combined hearings was to address issues common to both proceedings in a single set of hearings. In this way, a record was developed that allows the Commission to treat common issues consistently. Therefore, the testimony and exhibits of PG&E, SCE, SDG&E, and the Commission's Office of Ratepayer Advocates (ORA) regarding common issues are included in the record for both applications. The testimony and exhibits regarding utility specific issues are included only in the application to which they pertain.

SCE and SDG&E are not parties to this application. However, they participated in the development of the record. The Surfrider Foundation, and The Utility Reform Network are parties to this proceeding. However, they did not provide testimony or exhibits, cross-examine witnesses, or file briefs in this proceeding. Therefore, the term "parties," as used in the balance of this proceeding, refers to the active parties, PG&E and ORA. In addition, the term "participants" refers to PG&E, SCE, SDG&E, and ORA.

Trust fund contribution levels and the resulting revenue requirements are calculated using complex computer models. The models are first used to estimate the decommissioning costs in current dollars. The decommissioning costs are then escalated to the future years in which they will occur. The models then use the current trust fund balances, and estimated future earnings, to estimate the trust fund contributions necessary to pay the decommissioning costs when they occur. The models then determine the revenue requirement needed to provide the contributions. The disputed issues in this proceeding concern model inputs and assumptions as addressed below.

III. Overview

PG&E is requesting the following revenue requirements:

Diablo Canyon Decommissioning	\$24.034 million
Humboldt Nuclear Decommissioning	\$17.511 million
Humboldt SAFSTOR O&M	<u>\$ 8.254² million</u>
Total Request	\$49.799 million

IV. Utility-Specific Issues

A. Diablo Canyon Decommissioning Cost Estimate

PG&E's Diablo Canyon decommissioning cost estimate assumes that Diablo Canyon Unit 1 will be shut down in 2021, and Unit 2 shut down in 2025. PG&E estimated decommissioning costs using two methodologies: DECON,

² In its application, PG&E requested \$7.343 million. It revised the request to include \$669,000 in additional direct post 9/11 security costs and \$200,000 for Department of Energy Decontamination and Decommissioning fees for federal facilities used to produce nuclear fuel, plus the addition of franchise fees and uncollectibles, and administrative and general costs.

which is where radioactive contaminants are removed or decontaminated shortly after cessation of operations; and SAFSTOR. PG&E estimates that the DECON alternative will cost \$1.377 billion (in 2002 dollars) over a 20-year period starting in 2021, and that SAFSTOR will cost \$1.363 billion (in 2002 dollars) over a 41-year period. In this proceeding, PG&E selected the DECON alternative, which results in removal of the Diablo Canyon units more quickly.

ORA does not oppose the decommissioning cost study upon which PG&E's estimate is based. However, ORA does oppose PG&E's contingency factor, rates of return, escalation rates, and low level radioactive waste (LLRW) burial cost estimates. These issues are addressed later in this decision under Common Issues.

ORA points out that PG&E informed the Nuclear Regulatory Commission (NRC) that it is fully funded regarding the NRC's minimum requirements for decommissioning Diablo Canyon, and needed no further funding at this time. While PG&E admits that it made the statement, it explains that the NRC's minimum requirements include only the costs associated with radiological decommissioning. In addition, the calculation of the decommissioning costs is required to be based on a 1986 cost estimate provided by the NRC. Thus while PG&E says that Diablo Canyon decommissioning is fully funded as far as the NRC's requirements are concerned, PG&E says its estimate in this proceeding is based on a site-specific study that uses current estimated costs, and includes non-radiological decommissioning and site restoration. As a result, the scope of work and, therefore, the resulting decommissioning cost, is significantly greater than required by the NRC.

The NRC's requirements are far more limited than those addressed herein. We find that PG&E's statement to the NRC does not contradict its statements in this proceeding.

B. Humboldt Decommissioning Costs and O&M Expenses

Humboldt is currently in SAFSTOR mode following its shutdown in 1976. PG&E studied two alternatives: decommissioning starting in 2015, at a cost of \$362 million in 2002 dollars; and early decommissioning starting in 2006 at an approximate cost of \$300 million in 2002 dollars. PG&E recommends the early decommissioning alternative, which removes non-fuel related radioactive materials, while waiting for the federal Department of Energy to be able to take delivery of spent fuel. Since early decommissioning is less costly, we will adopt PG&E's recommendation.

ORA does not oppose the decommissioning cost study upon which PG&E's estimate is based. However, ORA does oppose PG&E's contingency factor, escalation rates, rates of return, and LLRW burial cost estimates. These issues are addressed later in this decision under Common Issues.

PG&E requests authority to recover the direct costs of its SAFESTOR O&M expenses for Humboldt for 2003 that it estimates to be \$8.254 million. It also requests authority to adjust the administrative, general, tax, and allocated common plant amounts in this calculation in its 2003 general rate case. In addition, PG&E requests attrition for its SAFESTOR O&M expenses in the amounts of \$218,000 for 2004, and \$ 230,000 for 2005. ORA does not oppose these requests. Since the requests are unopposed, we will grant them.

C. Early and Partial Decommissioning of Humboldt

PG&E has already commenced early decommissioning activities at Humboldt. In Resolution E-3503, adopted December 3, 1997, the Commission authorized PG&E to spend \$15.7 million on three decommissioning activities: mitigation of caisson in-leakage; removal and replacement of the ventilation stack; and a site radiological survey to support the decommissioning cost study. The Commission also found it reasonable to use the decommissioning trust funds to finance the three projects.

In Advice Letter 2095-E, submitted on March 28, 2001, PG&E requested authority to draw not more than \$8.3 million from the Humboldt Bay decommissioning trust funds to finance three additional decommissioning expense categories: \$0.95 million for decommissioning costs incurred above the \$15.7 million authorized in Resolution E-3503; \$3.5 million for additional design and licensing expenditures above the \$7 million authorized in Decision (D.) 00-02-046; and \$3.85 million for preparatory activities during 2001 through 2003 in anticipation of early transition from SAFESTOR to decontaminated status in 2004. In Resolution E-3737, adopted October 10, 2001, the Commission found it reasonable to use the decommissioning trust funds to finance the proposed projects. The request was approved in part subject to review of the requested expenditures in this proceeding, and subject to refund of any imprudent and unreasonable expenditures. The \$3.5 million and \$3.85 million requests were approved subject to the above provisions. The \$0.95 million request was denied, without prejudice, until reviewed for prudence and reasonableness in this proceeding.

The three projects addressed in Resolution E-3503 were completed. The \$0.95 million increase was primarily due to higher-than-expected levels of radiation in the suppression chamber, which required an expansion of the scope of the project, and increased costs for removal of the ventilation stack. ORA does not oppose PG&E's request to use the nuclear decommissioning trust funds to pay the \$0.95 million in costs.

PG&E and ORA agree that the \$3.5 million and \$3.85 million activities authorized in Resolution E-3737 have not been completed. They also agree that the unfinished projects should be reviewed for reasonableness in the next NDCTP, after they have been completed.

Discussion

As recommended by the PG&E and ORA, we find that the \$0.95 million expenditure was reasonable, and PG&E should be authorized to use the trust funds to pay for the expenditure. In addition, we find that the unfinished projects should be reviewed for reasonableness in the next NDCTP, after they have been completed.

D. Equity Turnover Assumption

In order to determine the net returns the trust funds will earn each year, it is necessary to make an assumption as to the amount of taxable capital gains that will be realized on equities during the year. This, in turn, necessitates an assumption as to the amount of equities sold each year.

PG&E assumed that 100% of the equities will be sold each year. It says that this assumption was adopted by the Commission in D.00-02-046. PG&E asserts that one cannot accurately predict when a portfolio manager will choose to sell a particular stock and take a capital gain or loss. PG&E's conservative approach is to assume that all of the trusts' equities are sold each year. This

results in all of the annual gains or losses being taxed each year. Additionally, taxes are paid annually on all income and interest to the trust.

ORA points out that PG&E's forecast assumes that all trust fund earnings are taxed each year although, in reality, capital gains are only taxed when securities are sold. It argues that PG&E's assumptions ignore the benefits of deferring taxes by holding securities for a longer term. Therefore, PG&E's methodology overestimates actual taxes, causing an underestimation of future fund balances. ORA claims that PG&E's estimates do not accurately reflect how its funds are actually managed and taxed. For example, although PG&E fully taxes the trusts each year in its estimates, there will be no significant withdrawals from the decommissioning funds until 2021 and 2023, which means that, in reality, there will not be any significant capital gains until then. ORA believes that PG&E's approach does not accurately describe how the funds will actually be managed.

Discussion

PG&E's assumption of a 100% annual equity turnover rate is overly conservative. For 1999 through 2002, PG&E's annual equity turnover rate ranged from 18% to 27% for qualified trusts, with an average of 24%.³ For 2000 through 2002, its annual equity turnover rate ranged from 18% to 49% for non-qualified trusts, with an average of 29%. PG&E has given us no reason to believe that future equity turnover rates will be substantially different from the recorded

³ There are two types of trusts. Qualified trusts hold decommissioning funds that result from contributions that qualify for an income tax deduction under U.S. Internal Revenue Code Section 468A. Nonqualified trusts hold decommissioning funds that result from other contributions.

turnover rates. Therefore, we will assume a 24% annual turnover rate for equities in the qualified trusts, and 29% for equities in the non-qualified trusts.

V. Common Issues

A. Rate of Return

For estimating the earnings of the nuclear decommissioning trusts, PG&E estimates an 11.0% pre-tax return on equities and a 7.0% pre-tax return on its fixed income assets. SCE estimates a pre-tax return on equities of between 7.42% and 10.11%, and a pre-tax return on fixed income assets of between 4.21% and 6.03%. SDG&E estimates a pre-tax return on equities of 7.42%, and a pre-tax return on fixed income assets of 6.03%. ORA recommends a 12.5% pre-tax return on equities and a 7.4% pre-tax return on fixed income assets.

PG&E's equity return forecast is based on the annualized rate of return for the U.S. equity market over rolling 10-year periods covering 80 years, from 1920 through 2001. PG&E believes that forecasts of long-term market returns are traditionally based on historic market experience over very long time periods, and it is preferable to include more data points where available to decrease the variance in the results. In PG&E's last general rate case (D.00-02-046), the Commission adopted an 11.0% pre-tax return on equities. PG&E believes an 11.0% pre-tax return on equities remains a reasonable and conservative forecast. In D.00-02-046, the Commission also adopted a 7.0% pre-tax return on the fixed income portion of PG&E's trusts. PG&E recommends the same value in this proceeding.

SCE used two sets of return assumptions to establish a range of contributions to its decommissioning trust funds for San Onofre Nuclear Generating Station Units 2 and 3 (SONGS 2&3) and Palo Verde Nuclear Generating Station Units 1, 2, and 3 (Palo Verde). The first set of assumptions

relies on DRI-WEFA (DRI)⁴ projections for: (1) the Standard & Poor's (S&P) 500 Stock Price Index, and (2) the dividend yield for the S&P 500 Stock Index, to calculate future equity returns. SCE maintains that when compared to estimates derived from historical data, DRI's Treasury bond yield projections are too high relative to their inflation projection, and DRI's estimate of future equity returns is too low. Therefore, it constructed an alternative set of return assumptions that adjust Treasury bond yield projections and future equity returns to reflect historical relationships. SCE believes that its two sets of return assumptions bound expected returns for the decommissioning trust funds.

SDG&E argues that it does not make sense to adopt identical rate of return assumptions for itself, SCE and PG&E because each company has its own separate and independent decommissioning trusts with portfolios of hundreds of different domestic and international stocks. As a result of these differences, the three utilities may choose different portfolio asset allocations, investment strategies, and investment advisors, all of which will impact the realized investment rates of return.

SDG&E used DRI projections as the basis for computing expected equity and fixed-income asset returns. SDG&E maintains that DRI forecasts should be consistently used in determining funding requirements. It believes that using DRI forecasts consistently over time provides the Commission with a consistent gauge to assess performance, and provides fewer opportunities for gaming that could occur if methodologies are changed every three years.

⁴ DRI is a company that provides economic forecasts.

Specifically, DRI projects that the average annual pre-tax return for the S&P 500 and 10-year Treasury bonds will average 7.42% and 6.03%, respectively, from 2002 through 2026, which covers the period that contributions will be made (through 2013) to the decommissioning trusts.⁵ SDG&E says the DRI forecast is also consistent with equity projections from a variety of investment professionals.

ORA recommends a 12.5% pre-tax return on equities, and a 7.4% pre-tax return for fixed income investments. ORA's 12.5% pre-tax return on equities is derived from the 48-year (1954-2001) average annual return for the S&P 500 of 12.77%. ORA contends that evaluating historic performance beginning in 1954, after the Federal Reserve removed its cap on government debt rates, creates a more reliable historic record than using data beginning before the Great Depression, as PG&E has done. Furthermore, using 1954 as a starting date allows analysis of 10-year Treasury bond data.

ORA says the Commission should not adopt PG&E's rate of return assumptions when the historic results have been much higher. ORA points out that PG&E's estimates are lower than readily available investment options such as tax-free municipal bonds. ORA believes its 7.4% pre-tax return for fixed income investments is comparable to the DRI forecast, current municipal bond rates, and actual performance of the trust funds.

While ORA does not oppose SCE's methods, it does oppose SDG&E's methods. SDG&E relied exclusively on DRI long-term forecasts. In contrast,

⁵ SDG&E expects to collect decommissioning contributions only through 2013 (through the end of operations), although it will continue to invest in equities until commencement of decommissioning.

ORA says that SCE's rate of return estimate uses DRI and its own estimates to forecast its decommissioning fund performance. ORA says SCE's approach is preferable because it incorporates consideration of the historical premium for equity risk that it believes has virtually disappeared in the DRI projections.

ORA also says that SDG&E did not back-test the DRI projections for accuracy. DRI's short-term equity performance forecast from the 1998 NDCTP did not forecast the current state of the equities market. ORA believes that using the DRI projections alone, without any adjustments for historical risk premium, is not a good methodology.

Discussion

The three utilities' trusts will have access to the same markets. As a result, their trusts will have the same investment opportunities. Therefore, we will adopt a uniform set of rate of return projections for all three utilities.

For equity returns, there is merit in using long-term historical data as used by PG&E and ORA. The difference in the time periods PG&E and ORA used dramatically alters the results. PG&E chose a long time period that includes two factors that introduce a downward bias: 1) the period of the Great Depression, and 2) a period when the Federal Reserve capped government debt rates. ORA derived its 12.5% pre-tax return on equities using data from the last 48 years, thereby avoiding these biasing factors. Therefore, if we were to adopt an estimate that used long-term historical data, we would adopt ORA's recommendation as the most reasonable.

SDG&E and SCE used DRI forecasts, rather than historical data, to derive their estimates for equity returns. SDG&E and SCE use the DRI forecasts in different ways: SDG&E used DRI's estimates without any adjustments, whereas SCE used a combination of DRI's estimates and SCE's own assumptions

and estimates. SCE adjusted the DRI projections by incorporating its own estimates, and the result from SCE's estimate is superior to the un-adjusted DRI forecast because DRI does not take the historical premium for equity risk into account. Therefore, if we had to choose between SCE's and SDG&E's estimates, we would find that SCE's is more reasonable.

Based upon the analysis above, we have two options for pre-tax return on equities to consider: 1) ORA's estimate of 12.5% based on historical data, 2) SCE's estimate (between 7.42% and 10.11%) derived from its adjustments to the DRI's forecast. We note that ORA does not find fault with SCE's methodology, but we do not adopt it here. We find that ORA's methodology that relies on historical data is a better basis for estimating return on equity than SCE's complicated methodology that utilizes its own alternative return assumptions. Therefore, we adopt ORA's estimate of 12.5%.

Regarding fixed assets, the parties applied the same methodologies they used for returns on equity, and we reach the same conclusions about the reasonableness of the values each provides. Therefore, we are presented with: 1) ORA's estimate of 7.4% based on historical data, and 2) SCE's estimate of 4.21% derived from its adjustments to the DRI's forecast. Therefore, for the same reasons discussed above we will adopt a 7.4% pre-tax return on fixed assets.

B. Escalation Rate

The escalation rate is used to bring the current estimate of decommissioning costs to the future years in which the costs will be incurred.

PG&E calculated the simple average of the escalation rates for labor, LLRW burial costs, contract labor, materials, and other costs to arrive at an

annual escalation rate. It then added a 20% contingency factor to arrive at its recommended overall escalation rate.

PG&E's escalation rates, except for LLRW burial costs, are based on DRI forecasts. The DRI forecasts do not extend beyond 2023. Therefore, PG&E used a DRI forecast to calculate escalation rates until 2023, and used the 2023 rate for subsequent years. It represents that its labor, materials, contract labor and other escalation rates are comparable to the most recent DRI forecasts.

PG&E believes that using a weighted average rate simply adds false precision to a highly speculative estimate. PG&E says that its methodology is the same as was used to calculate the overall escalation rate used by PG&E, and adopted by the Commission in D.00-02-046.

PG&E added a 20% contingency factor to come up with its overall escalation rate.⁶ PG&E states that the contingency factor ensures against future ratepayer liabilities by recognizing uncertainties with regard to changes in the economy, and protects against uncertainties in how much decommissioning costs may increase in the future.

PG&E recommends a 7.5% LLRW burial cost escalation rate for use in this proceeding as it was in D.00-02-046. PG&E says it is uncertain where the LLRW will be buried, and how much it is going to cost. PG&E believes that since the uncertainty is even greater now, with the Ward Valley disposal site stalled, and other sites about to stop taking California LLRW, a 7.5% LLRW burial cost escalation rate is a conservative and reasonable assumption.

⁶ In D.00-02-046, the Commission adopted a 25% contingency factor.

SCE and SDG&E (the utilities) calculated separate escalation rates for: (1) labor, (2) the combined category of material, equipment, and other, and (3) LLRW burial costs. They based the separate escalation rates for labor, and the combined category of material, equipment, and other upon DRI projections. The escalation rate for the combined category of material, equipment, and other was based on a weighted average of the escalation rates for each component.

The utilities used Nuclear Regulatory Commission (NRC) published data to estimate an escalation rate for LLRW burial costs. The NRC data shows rapidly increasing burial costs followed by large, discrete jumps. The utilities utilized two similar statistical models to produce ten estimates ranging from 6.8% to 19.9%. They then chose a 10% LLRW burial cost escalation rate because of the possibility of additional large jumps in LLRW burial costs.

The utilities did not include a separate contingency factor in their calculation of escalation rates.

ORA argues that an unweighted average escalation rate makes no statistical sense, and overestimates actual escalation. ORA maintains that PG&E's unweighted calculation gives a 20% weighting to each of the five categories. However, the equipment and materials category accounts for 29%, and the "other" category accounts for 6% of actual expenditures, rather than the 20% used by PG&E for these two categories. ORA contends that this proves the inaccuracy of using an unweighted average. As a result, ORA recommends that a weighted average, based on expenditures, be used.

ORA also says that PG&E's use of the 2023 value for years after 2023, when using DRI forecasts in calculating an average escalation rate, gives undue weight to the 2023 value. It points out that, while the escalation rates in the

earlier years have some relation to historic costs, the years after 2023 are not based on any independent forecast.

ORA contends that PG&E relied on a DRI forecast from 2001 in generating the labor escalation rate, and that a more recent DRI forecast yields significantly lower numbers. Therefore, ORA recommends that the Commission adopt the most recent DRI data.

ORA also says that PG&E's request for an additional 20% contingency factor is redundant since an overall contingency factor is already built into its decommissioning cost estimate.

ORA recommends a 5% escalation rate for LLRW burial costs. This is because burial costs increased only 2.4% from 1996 to the present, and only 4.3% from 2000 to 2001. ORA says that PG&E's only rationale for using a 7.5% burial cost escalation rate is that the Commission has previously adopted it.

ORA also opposes the utilities' proposed 10% LLRW burial cost escalation rate. It says the utilities relied entirely on NRC disposal cost indexes from 1986 to 2000, but did not attempt to independently verify the data. It believes that a reasonable cost escalation projection should consider additional factors to help explain a data set, and should look beyond the numbers to determine causes for their variation, as well as possible future developments. ORA says the utilities performed no such evaluation, and did not inquire as to why certain years were missing from the NRC data, or why the costs jumped significantly in certain years.

ORA maintains that the utilities' choice of data is not representative of future costs. ORA says the data used by the utilities, from three disposal sites for the period 1986-2000, reflects non-competitive disposal pricing. It also says that more recent data under more competitive conditions for Barnwell in South

Carolina, and Envirocare in Utah, including contracted San Onofre Nuclear Generating Station Unit 1 (SONGS 1) LLRW burial costs, were not considered in the utilities' estimate. ORA believes the utilities have projected the most expensive possible future scenario without consideration of the prospect of a more competitive market for burial of LLRW.

Discussion

While we agree with PG&E that we are dealing with a highly speculative estimate, that is no reason to deliberately introduce an error into the calculation. ORA has demonstrated that the actual expenditures do not support the equal weighting that results from a simple average. In addition, the utilities used a weighted average. Therefore, except for LLRW burial costs, we will require the use of a weighted average.

The participants agree that a DRI forecast should be used to forecast escalation rates, except for LLRW burial costs. The disagreement appears to be over which forecast to use. Here again, although forecasts of the future are speculative by nature, it makes sense to use the most recent available forecasts. Therefore, we will use the DRI forecasts used by ORA, which are the most recent DRI forecasts in the record.

We note that the DRI forecasts run only through 2023. When determining an average escalation rate for a forecast period, PG&E uses the 2023 rate for subsequent unforecasted years. However, as pointed out by ORA, this approach gives additional weight to the last forecasted year. There is no reason that the forecast for 2023 is any better than the forecast for other years. Therefore, the average rate for the forecast period shall be used for the subsequent unforecasted years. This means that the rate for 2024, and each year thereafter, would be the average of the rates for 2002-2023.

We adopt contingency factors for cost estimates when the work to be done may change substantially over time due to such things as changing NRC requirements. This is the case with the decommissioning cost estimate. However, the escalation rate is an estimate of the rate of change in the cost of specified work. The Commission routinely adopts forecasts of cost increases, in general rate cases for example, without applying contingency factors. Since the risk of substantial changes in the work to be done and the requirements that must be met to do the work is covered by the contingency factor applied to the decommissioning cost estimate, there is no reason to apply a separate contingency factor to the calculation of the escalation rate. We also note that the utilities are not requesting one. Therefore, we will not adopt a separate contingency factor for escalation rates.

Regarding the LLRW burial cost escalation rate, the utilities estimate a 10% rate based on economic modeling of NRC data, PG&E proposes a 7.5% escalation rate based on our previous adoption of it, and ORA proposes a 5% escalation rate based on burial cost increases from 1996 to the present. Since the NRC data shows significant jumps and has no data for some years, we believe that it demonstrates the uncertainty of the costs, but does not provide a good basis for estimation. Therefore, we will not adopt the utilities' 10% escalation rate. Likewise, ORA has not demonstrated that the recorded burial costs increases from 1996 to the present provide a better basis for estimation than the NRC data. Therefore, we will not adopt ORA's 5% escalation rate. As pointed out by PG&E, it is uncertain where the wastes will be buried, and at what cost. Burial costs are no less certain now than they were when the Commission adopted a 7.5% escalation rate for PG&E in D.00-02-046. Therefore, since no

participant has demonstrated that its estimate is more accurate than the other estimates, it is reasonable to continue using the previously approved rate.

C. LLRW Burial Costs

LLRW burial costs are the costs of burying the LLRW generated by the decommissioning of a nuclear power plant. PG&E estimates LLRW burial costs of \$404 per cubic foot.⁷

PG&E points out that, in D.00-02-046, the Commission adopted LLRW burial costs at the Ward Valley site of \$509 per cubic foot (in 1997 dollars⁸). Because there is no indication that Ward Valley will ever be available during the times it will be needed, PG&E based its estimate on the costs of the only facility in America to which it can send more-contaminated LLRW, at Barnwell, South Carolina. Even though Barnwell is going to stop accepting wastes from non-Atlantic Compact generators such as PG&E, SCE, and SDG&E, PG&E believes Barnwell's costs are appropriate because they include all of the costs a future disposal facility (such as Ward Valley is intended to be) would likely bill a generator. Given the complete uncertainty over where these wastes will

⁷ In PG&E's application and exhibits, it used LLRW burial costs of \$404 per cubic foot for Diablo Canyon. For Humboldt 2015 decommissioning, it used \$450 per cubic foot. For Humboldt early decommissioning, it used \$140 per cubic foot for Class A LLRW and \$450 per cubic foot for the more hazardous classes of LLRW. This yields an average LLRW burial cost of \$147 per cubic foot for Humboldt early decommissioning. In its briefs, PG&E chose a conservative recommendation of \$404 per cubic foot without distinguishing between Diablo Canyon and Humboldt. Therefore, we address only PG&E's \$404 per cubic foot recommendation herein.

⁸ \$509 per cubic foot in 1997 would be roughly \$597 per cubic foot today (assuming an average inflation rate of 2.7% over the six-year time period). This suggests that LLRW burial costs may be on a downward trend.

eventually go, and how much it will cost once that place is identified and operational, PG&E believes its \$404 per cubic foot estimate is optimistic.

The utilities' burial cost estimate is \$72.60 per cubic foot for SONGS 2&3. This estimate is based on the assumed availability of a licensed disposal facility with rates comparable to the Envirocare facility, and located within 1,500 miles of the SONGS site.

SCE's LLRW burial cost estimate for Palo Verde is \$87 per cubic foot. SCE says its estimate is consistent with APS'⁹ assumptions about the burial sites that APS will use for Palo Verde LLRW.

ORA recommends that the Commission adopt the utilities' current LLRW burial cost estimate of \$72.60 per cubic foot. ORA claims that PG&E derives its \$404 estimate from recent cost increases at Barnwell and other facilities. ORA believes that PG&E's methodology is faulty because it ignores the likely availability of alternative facilities. ORA argues that the utilities' \$72.60 per cubic foot estimate reflects their current burial cost for all classes of LLRW. ORA does not oppose the utilities' estimated LLRW burial costs for Palo Verde.

Discussion

In D.00-02-046, we adopted burial costs of \$509 per cubic foot (in 1997 dollars).¹⁰ In this proceeding, the participants have recommended costs ranging from \$76.20 to \$404 per cubic foot. Therefore, it appears that the participants

⁹ The Arizona Public Service Company (APS) is the operating agent for Palo Verde.

¹⁰ \$509 per foot would be roughly \$597 per foot today (assuming an average inflation of 2.7% over the six year time period). This further demonstrates that the unit costs for LLRW burial costs are on a significant downward trend.

agree that the costs should be reduced. However, they disagree on how much lower they should be.

Only PG&E and SCE actually prepared LLRW burial cost estimates. SDG&E and ORA recommend use of SCE's estimate.

We adopt SCE's LLRW burial cost estimate of \$72.60 per cubic foot, based on SCE's comprehensive analysis of decommissioning costs for SONGS 2&3. We are aware that estimating costs so far out in the future is imprecise, and for that reason, we are compelled to use the best estimate available. This authorized amount is slightly less than SCE's estimates, and significantly less than PG&E's outlier estimate of \$404.

D. Contingency Factors

The contingency factor is used to increase the estimated decommissioning costs to allow for uncertainties in the required decommissioning work and, therefore, the costs. PG&E recommends an overall contingency factor of 40% for Diablo Canyon. It also proposes an overall contingency factor of 40% for Humboldt for 2015 decommissioning, and 30% for early decommissioning. In contrast, ORA recommends that the Commission adopt the engineering contingency factors estimated for PG&E by TLG Services, Inc. (TLG) for Diablo Canyon and Humboldt, as the overall contingency factors.

The decommissioning cost studies, performed by TLG for PG&E, identified engineering contingency factors of 18.83% for Diablo Canyon Unit 1, 17.95% for Diablo Canyon Unit 2, and 18.54% for early decommissioning, and 21% for 2015 decommissioning of Humboldt. PG&E proposes an overall contingency factor of 40% for Diablo Canyon to take into account the engineering contingencies addressed by TLG, as well as other non-engineering contingencies such as costs associated with delays in approval of decommissioning plans,

changes in the project work scope, regulatory changes and policy decisions at the state or federal level which change the scope, timeframe or level of work required for decommissioning.¹¹ Similarly, it also proposes an overall contingency factor of 40% for Humboldt for 2015 decommissioning, and 30% for early decommissioning.

PG&E notes that for Palo Verde, a plant more like Diablo Canyon and whose decommissioning cost study was prepared by the same consultant that prepared PG&E's decommissioning cost studies, SCE is recommending a contingency factor of 40%. PG&E argues that SCE was able to reduce its contingency factor to 21% for SONGS 2&3 by making specific new estimates of costs that were previously undefined and assumed to be within the 40% contingency. Therefore, PG&E believes SCE did not eliminate its contingencies, but made individual estimates for many elements previously considered under contingency.

PG&E argues that the 40% contingency factor should be reduced only as it gets closer to the time that the actual work will be performed and costs become more certain, or as the components of potential contingencies are identified and separately estimated, as appears to be the case with SONGS 2&3. This is the reason it is recommending a 30% contingency factor for Humboldt early decommissioning.

ORA recommends that the Commission adopt TLG's estimated contingency factors. ORA says that TLG applied individual activity contingency

¹¹ Engineering contingencies include such things as weather related delays and costs, personnel turnover, adverse working conditions, unrecorded construction modifications, previously undetected radioactive contamination, etc.

factors of 10% to 75% to arrive at its estimates, as opposed to PG&E's 30% or 40% overall contingency factor. ORA argues that Diablo Canyon and SONGS 2&3 are roughly of the same vintage, and the utilities have been able to reduce the SONGS 2&3 contingency factor from 40% to 21%. ORA asserts that a reduction in the contingency factor is appropriate because of developments in industry-wide experience.

Discussion

PG&E's consultant (TLG) derived contingency factors of 18.83% for Diablo Canyon Unit 1, 17.95% for Diablo Canyon Unit 2, and 18.54% for early decommissioning, and 21% for 2015 decommissioning of Humboldt. PG&E then increased these engineering estimates to 40% for Diablo Canyon and 30% for Humboldt to include engineering, financial, regulatory, and industry uncertainties in the initial cost estimate. ORA recommended we adopt TLG's contingency factors of 17.95% to 21% for these units.

We note that SCE has utilized its decommissioning experience with SONGS 1 to refine its estimate for SONGS 2&3.¹² These refinements led to a reduction in uncertainty, and therefore, a reduction in the overall contingency factor from 40% to 21%. SCE's estimates for SONGS 2&3 are relevant for Diablo Canyon because the plants are of similar age, and are scheduled to begin decommissioning at about the same time. In adopting SCE's proposed estimates for SONGS 2&3 we note that SCE has applied what it has learned from decommissioning SONGS 1 to substantially reduce its contingency factor.

¹² The estimate was developed by SCE, but used by both SCE and SDG&E.

PG&E and TLG have access to much of the same industry information as SCE. We note that PG&E's consultants provide contingency factors in the same general range of those proposed by SCE for SONGS 2&3.

Based on our approval of SCE's overall contingency factor estimates of 21% for SONGS 2&3, TLG's engineering estimate of about 18%, and ORA's recommendation of TLG's estimate, we will not adopt PG&E's proposed overall contingency factor of 40% for Diablo Canyon. We recognize that TLG's estimate may be biased a bit low as it is focused solely on engineering contingencies, and does not include the other factors PG&E considered when it requested an overall contingency factor that is roughly double TLG's estimate. We find that the lessons learned from SCE's decommissioning efforts at SONGS 1 should be applied to Diablo Canyon, and that SCE's overall decommissioning estimate is only marginally above TLG's. As a result, we will adopt a 21% overall contingency factor for Diablo Canyon.

As to Humboldt, we note that PG&E's request is based on early decommissioning for which it has requested a contingency factor of 30%.¹³ Just as with Diablo Canyon, PG&E has access to much of the same industry information as SCE. We expect that PG&E availed itself of this information and experience to produce its decommissioning cost estimates. In addition, with early decommissioning of Humboldt scheduled to start in 2006, we expect there to be substantially less uncertainty for Humboldt than for Diablo Canyon or Palo Verde, because they will all begin decommissioning much later. For the above

¹³ PGE's requested overall contingency factor is roughly double TLG's estimate of 18.54% for Humboldt.

reasons, we believe that PG&E's proposed overall contingency factor of 30% for Humboldt early decommissioning is too high.

Again we look to SCE's estimate for SONGS 2&3 as a benchmark. SONGS 3&3 is scheduled to begin decommissioning much later than Humboldt. This suggests that the contingency factor for Humboldt should be closer to the 21% contingency factor used for SONGS 2&3 than PG&E's unrefined estimate. Based on SCE's benchmark value of 21% for SONGS 2&3, and the early decommissioning schedule for Humboldt, we shall adopt an overall contingency factor of 21% for Humboldt.

VI. Conclusion

As discussed above, we have adopted the following modifications to PG&E's calculation of the decommissioning cost revenue requirements:

- A 24% turnover rate for equities in the qualified trusts.
- A 29% turnover rate for equities in the non-qualified trusts.
- A 12.5% pre-tax return on equities.
- A 7.4% pre-tax return on fixed assets.
- Escalation rates, except for LLRW burial costs, based on the most recent DRI forecasts in the record, using weighted averages, and no separate contingency factor.
- A 7.5% escalation rate for LLRW burial costs.
- LLRW burial costs of \$72.60 per cubic foot.
- Contingency factors of 21% for Diablo Canyon and Humboldt.

Based on the above modifications to the decommissioning cost calculation for Diablo Canyon and Humboldt, we find that the decommissioning trusts are fully funded. Therefore, we will not authorize a revenue requirement for decommissioning Diablo Canyon or Humboldt. We adopt an annual revenue requirement for Humboldt SAFESTOR O&M of \$8.254 Million. This results in an overall annual revenue requirement of \$8.254 Million.

In addition to the above, we find that PG&E's \$0.95 million expenditure for Humboldt decommissioning costs incurred above the \$15.7 million authorized in Resolution E-3503 was reasonable, and PG&E should be allowed to use Humboldt decommissioning trust funds to pay for them. We also find that the \$3.5 million and \$3.85 million Humboldt decommissioning projects authorized in Resolution E-3737 should be reviewed for reasonableness in the next NDCTP, after they have been completed.

This decision should be effective immediately so that the revenue requirements adopted herein can be put into rates as soon as possible.

VII. Rate Proposal

PG&E proposes to implement the revenue requirement authorized in this proceeding on an equal cents per kilowatt-hour basis, consistent with D.00-06-034. ORA does not object to this proposal. D.00-06-034 requires that nuclear decommissioning costs be allocated on an equal cents per kilowatt-hour basis. Therefore, we will require PG&E to implement the revenue requirement adopted herein on an equal cents per kilowatt-hour basis.

VIII. Procedural Matters

In Resolution ALJ 176-3085, dated April 4, 2002, the Commission preliminarily categorized this application as ratesetting, and preliminarily

determined that hearings were necessary. Hearings were held on September 16 and 17, 2002.

IX. Comments on Proposed Decision

The proposed decision of the ALJ in this matter was mailed to the parties in accordance with Pub. Util. Code § 311(d) and Rule 77.1 of the Rules of Practice and Procedure. The Alternate decision of Commissioner Lynch in this matter was mailed to the parties in accordance with Section 311(d) of the Public Utilities Code and Rule 77.1 of the Rules of Practice and Procedure. Comments were filed on _____, and reply comments were filed on _____.

X. Assignment of Proceeding

Geoffrey F. Brown is the Assigned Commissioner and Jeffrey P. O'Donnell is the assigned Administrative Law Judge in this proceeding.

Findings of Fact

1. Early decommissioning of Humboldt is less costly than decommissioning starting in 2015.
2. The decommissioning cost studies upon which PG&E's estimates for Diablo Canyon and Humboldt are based are unopposed except for contingency factors, escalation rates, rates of return, and LLRW burial cost estimates.
3. PG&E's request for authority to recover \$8.254 Million in Humboldt SAFESTOR O&M is unopposed.
4. PG&E's request to adjust the SAFESTOR O&M administrative, general, tax, and allocated common plant amounts in the calculation of decommissioning cost revenue requirements in its 2003 general rate case is unopposed.
5. PG&E's request for attrition for the SAFESTOR O&M for 2004 and 2005 is unopposed.

6. PG&E has already commenced early decommissioning activities at Humboldt.

7. In Resolution E-3503, the Commission authorized PG&E to spend \$15.7 million on three decommissioning projects, and found it reasonable to use the decommissioning trust funds to finance them.

8. In Resolution E-3737, the Commission found it reasonable to use the decommissioning trust funds to finance three proposed projects. The \$3.5 million and \$3.85 million projects were approved subject to review of the requested expenditures in this proceeding. The request for approval of the \$0.95 million project was denied until reviewed in this proceeding.

9. PG&E's request to use the Humboldt decommissioning trusts to pay for the \$0.95 million project is unopposed.

10. The \$3.5 million and \$3.85 million projects have not been completed.

11. For 1999 through 2002, PG&E's annual equity turnover rate ranged from 18% to 27% for qualified trusts, with an average of 24%. For 2000 through 2002, its annual equity turnover rate ranged from 18% to 49% for non-qualified trusts with an average of 29%.

12. PG&E has given us no reason to believe that future equity turnover rates will be substantially different from recorded turnover rates.

13. In D.00-02-046, the Commission adopted a forecast of an 11% pre-tax return on equities, and a 7% pre-tax return on the fixed income portion of PG&E's trusts.

14. No participant has indicated specifically how differences in decommissioning trust portfolios, and investment committee risk tolerances are incorporated into its rate of return estimates.

15. The three utilities' trusts will have access to the same equities markets, with the same investment opportunities.

16. PG&E chose a long time period that includes two factors that introduce a downward bias: 1) the period of the Great Depression, and 2) a period when the Federal Reserve capped government debt rates.

17. ORA derived its 12.5% pre-tax return on equities and its 7.5% pre-tax return on fixed assets using data from the last 48 years.

18. The DRI forecasts, which SDG&E and SCE use in different ways, yield lower returns than the historical data used by PG&E and ORA.

19. ORA's methodology that relies on historical data to calculate return is a better basis for estimating return than SCE's complicated methodology that utilizes its own alternative return assumptions.

20. The Commission adopted a 7.5% LLRW burial cost escalation rate for PG&E in D.00-02-046.

21. The NRC data shows rapidly increasing LLRW burial costs followed by large, discrete jumps.

22. All parties' estimates for LLRW burial costs were below the amounts adopted in D.00-02-046.

23. The utilities did not include a separate contingency factor in their calculation of escalation rates.

24. Since PG&E's unweighted calculation of escalation rates gives a 20% weighting to each of the five escalation categories, while the equipment and materials category accounts for 29%, and the "other" category accounts for 6% of actual expenditures, PG&E's use of a simple unweighted average is inaccurate.

25. The participants agree that a DRI forecast should be used in forecasting escalation rates, except for LLRW burial cost escalation.

26. ORA's DRI forecasts are the most recent in the record.

27. When using DRI forecasts to estimate escalation rates, use of the value for the last forecasted year for subsequent unforecasted years gives additional weight to the last forecasted year.

28. There is no reason that the DRI forecast for the last forecasted year is any better than the forecast for other years.

29. The Commission adopts contingency factors for cost estimates when the work to be done, and the requirements that must be met to do the work, may change substantially over time.

30. The escalation rate is an estimate of the rate of change in the cost of specified work.

31. The Commission routinely adopts forecasts of cost increases, in general rate cases for example, without applying contingency factors.

32. Since the risk of substantial changes in the work to be done and the requirements that must be met to do the work is covered by the contingency factor applied to the decommissioning cost estimate, there is no reason to apply a separate contingency factor to the calculation of the escalation rate.

33. The NRC has no LLRW burial cost data for some years.

34. ORA has not demonstrated that its recorded LLRW burial cost increases from 1996 to the present provide a better basis for estimation than the NRC data used by the utilities.

35. It is uncertain where the LLRW will be buried, and at what cost.

36. LLRW burial costs are no less certain now than they were when the Commission adopted a 7.5% LLRW burial cost escalation rate for PG&E in D.00-02-046.

37. SCE has done a more comprehensive analysis of decommissioning costs, especially for SONGS 2&3. Future LLRW burial costs are uncertain.

38. The midpoint of the range of LLRW burial cost escalation rates proposed by the participants is 7.5%.

39. The facility at Barnwell, South Carolina, upon which PG&E's LLRW burial cost estimate is based, is going to stop accepting wastes from non-Atlantic Compact generators such as PG&E, SCE, and SDG&E.

40. The utilities have done a more comprehensive analysis of decommissioning costs, especially for SONGS 2&3, than PG&E.

41. The decommissioning cost study for Palo Verde was prepared by the same consultant that prepared PG&E's decommissioning cost studies.

42. PG&E's contingency factors for Diablo Canyon and Humboldt accommodate engineering, financial, regulatory, and industry uncertainties in the initial cost estimate, while the TLG contingency factor addresses only engineering uncertainties.

43. SCE has utilized its decommissioning experience and knowledge to reduce the contingency factor to 21% for SONGS 2&3.

44. PG&E has access to much of the same industry information as SCE.

45. PG&E availed itself of industry information and experience to produce its decommissioning cost estimates.

46. The fact that SONGS 2&3 are estimated to begin decommissioning in 2022, and Diablo Canyon is estimated to begin decommissioning in 2021-2025, suggests the use of a contingency factor for Diablo Canyon of less than 40%.

47. PG&E's Diablo Canyon decommissioning cost estimate has not been refined to the level of the utilities' estimate for SONGS 2&3.

48. PG&E's 30% contingency factor for Humboldt is based on early decommissioning.

49. With early decommissioning of Humboldt scheduled to start in 2006, there should be substantially less uncertainty than for Diablo Canyon or Palo Verde, since they will all begin decommissioning much later.

50. Because SONGS 2&3 will begin decommissioning much later than Humboldt, a contingency factor of 21% is appropriate.

51. Because decommissioning planning for Humboldt has not been done to the same level of detail as for SONGS 2&3, use of a 21% contingency factor for Humboldt would be inappropriate.

52. PG&E's proposal to implement the revenue requirement adopted herein on an equal cents per kilowatt-hour basis is unopposed.

Conclusions of Law

1. PG&E's recommended early decommissioning of Humboldt should be adopted.

2. PG&E's request for authority to recover \$8.254 Million in Humboldt O&M should be granted.

3. PG&E's request for authority to adjust the administrative, general, tax, and allocated common plant amounts in the calculation of Humboldt O&M expenses in its 2003 general rate case should be granted.

4. PG&E's request for attrition for SAFESTOR O&M for 2004 and 2005 should be granted.

5. The \$0.95 million expenditure for Humboldt decommissioning costs incurred above the \$15.7 million authorized in Resolution E-5303 was reasonable, and PG&E should be allowed to recover the costs from the trusts.

6. The \$3.5 million and \$3.85 million projects authorized in Resolution E-3737 should be reviewed for reasonableness in the next NDCTP, after they have been completed.

7. The Commission should adopt a 24% turnover rate for equities in the qualified trusts, and 29% for equities in the non-qualified trusts. For any year in which a higher amount of equities will need to be sold to pay for decommissioning costs, the higher amount should be used.

8. The Commission should adopt a uniform set of rate of return projections for all PG&E, SCE, and SDG&E.

9. D.99-06-007 approved a settlement and, therefore, is not a precedent.

10. The Commission should adopt a 12.5% pre-tax return on equities.

11. The Commission should adopt a 7.5% pre-tax return on fixed assets.

12. Since PG&E's actual expenditures do not support use of a simple average in determining escalation rates, and the utilities use a weighted average, the Commission should require the use of a weighted average.

13. Although forecasts of the future are speculative by nature, it makes sense to use the most recent available forecasts in estimating escalation rates.

14. The Commission should adopt the DRI forecasts used by ORA, which are the most recent DRI forecasts in the record, for use in determining escalation rates.

15. When using DRI forecasts for estimating escalation rates, the average rate for the forecast period should be used for the subsequent unforecasted years.

16. The Commission should not adopt a separate contingency factor for escalation rates where one is already applied to the decommissioning cost estimate.

17. NRC LLRW burial cost data does not provide a good basis for estimating LLRW burial cost escalation.

18. The Commission should adopt a 7.5% escalation rate for LLRW burial costs.

19. SCE's estimate of LLRW burial costs is based on the detailed analysis of decommissioning costs at SONGS 2&3, and is the most reasonable estimate.

20. The Commission-approved estimates of LLRW burial costs should be based on the best analysis available.

21. The Commission should adopt a LLRW burial cost estimate of \$72.60 per cubic foot.

22. The Commission should adopt a 21% contingency factor for Diablo Canyon.

23. The Commission should adopt a 21% contingency factor for Humboldt.

24. No revenue requirement should be authorized for Diablo Canyon decommissioning because PG&E's decommissioning trusts for Diablo Canyon are sufficient to cover the estimated decommissioning costs.

25. No revenue requirement should be authorized for Humboldt decommissioning because PG&E's decommissioning trusts for Humboldt are sufficient to cover the estimated decommissioning costs.

26. The Commission should authorize an annual revenue requirement \$8.254 million for Humboldt SAFSTOR O&M.

27. This decision should be effective immediately so that the revenue requirements adopted herein can be put into effect as soon as possible.

28. D.00-06-034 requires that decommissioning costs be allocated on an equal cents per kilowatt-hour basis.

29. The revenue requirement adopted herein should be implemented on an equal cents per kilowatt-hour basis.

O R D E R

IT IS ORDERED that:

1. Annual revenue requirements of \$ \$8.254 million for Humboldt SAFSTOR operations and maintenance expenses is adopted for 2003.

2. No revenue requirement is authorized for decommissioning Diablo Canyon Nuclear Power Plant Units 1 and 2.

3. No revenue requirement is authorized for decommissioning Humboldt Bay Power Plant Unit 3 (Humboldt).

4. Pacific Gas and Electric Company (PG&E) shall implement the revenue requirements adopted herein on an equal cents per kilowatt-hour basis.

5. PG&E shall file an advice letter implementing the revenue requirements adopted herein no later than 30 days after the effective date of this decision.

6. PG&E's request for attrition for its SAFESTOR O&M expenses in the amounts of \$218,000 for 2004, and \$230,000 for 2005 is granted.

7. PG&E's request for authority to adjust the administrative, general, tax, and allocated common plant amounts in the calculation of Humboldt SAFESTOR operation and maintenance expenses in its 2003 general rate case is granted. The amount of any such adjustment shall be determined therein.

8. The \$0.95 million expenditure for Humboldt decommissioning incurred above the \$15.7 million authorized in Resolution E-5303 is reasonable, and PG&E is authorized to recover the costs from the Humboldt decommissioning trusts.

9. The \$3.5 million and \$3.85 million Humboldt decommissioning projects authorized in Resolution E-3737 shall be reviewed for reasonableness in the next

nuclear decommissioning cost triennial proceeding, after they have been completed.

10. This proceeding is closed.

This order is effective today.

Dated _____, at San Francisco, California.