

Decision 12-09-008 September 13, 2012

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Application of Pacific Gas and Electric Company for Approval of Ratepayer Funding to Perform Additional Seismic Studies Recommended by the California Energy Commission. (U39E)

Application 10-01-014
(Filed January 15, 2010
reopened September 23, 2011)

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DECISION GRANTING THE APPLICATION

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DECISION GRANTING THE APPLICATION

1. Summary

In this reopened application, Pacific Gas and Electric Company requests authority to recover in customer rates an additional \$47.5 million above the \$16.73 million approved in Decision 10-08-003, for a total of \$64.25 million, to perform additional seismic studies recommended by the California Energy Commission. We grant the application.

2. Introduction

In 2006, the California legislature enacted Assembly Bill (AB) 1632, which directed the California Energy Commission (CEC) to: "...assess the potential vulnerability of California's largest base load power plants, Diablo Canyon and San Onofre Generating Station, to a major disruption due to a major seismic event or plant aging"¹ Thereafter, in November 2008, the CEC issued a report documenting its assessment and including numerous recommendations directed to Pacific Gas and Electric Company (PG&E) and others (AB 1632 Report).²

Relevant to this application, the AB 1632 report recommended that, in addition to continuing the work performed by PG&E as part of its Long Term Seismic Program (LTSP), which has been ongoing since the Diablo Canyon operating license was issued, PG&E should:

- Use three-dimensional (3-D) geophysical seismic reflection mapping and other advanced techniques to explore fault zones near Diablo Canyon; and

¹ See Cal. Pub. Resources Code § 25303.

² California Energy Commission Report, *An Assessment of California's Nuclear Power Plants: AB 1632 Report* (CEC-100-2008-009-CMF, November 2008).

- Assess the implications of a San Simeon-type earthquake beneath Diablo Canyon. This assessment should include expected ground motions and vulnerability assessments for safety-related and non-safety-related plant systems and components that might be sensitive to long-period motions in the near field of an earthquake rupture.³

After the CEC issued its AB 1632 Report, and in response, PG&E filed Application (A.) 10-01-014 requesting \$16.73 million in funding for detailed onshore and offshore seismic studies, using two-dimensional (2-D) and 3-D technologies, in the area surrounding Diablo Canyon. That request also included funding to install four ocean bottom seismometer (OBS) units to supplement the existing 20 onshore stations. Those OBS units will enable PG&E to locate offshore earthquakes more accurately. We granted PG&E's funding request in Decision (D.) 10-08-003.

Upon issuance of D.10-08-003, PG&E proceeded to implement the 2-D and 3-D seismic studies. That implementation included the presentation of study plans to and receipt of feedback from the Independent Peer Review Panel (IPRP) established by the Commission in D.10-08-003 to perform an independent review of the seismic study plans and results.⁴ Prior to filing the motion to re-open A.10-01-014 in September 2011, PG&E had already completed the survey design and data acquisition phases of the onshore 2-D seismic studies and the survey design and data acquisition for two of the three survey phases of the offshore low energy 2-D/3-D seismic studies.⁵ As PG&E undertook this work, PG&E

³ *Id.* at 6-7.

⁴ D.10-08-003, Conclusions of Law 3 and 4.

⁵ Exhibit PG&E-3 at 1.

determined that the geographical area from which data should be collected should be expanded significantly.⁶

As the scope of the study area expanded the cost to perform the 2-D and 3-D studies onshore and offshore increased, prompting PG&E to request that the Commission re-open A.10-01-014 to consider the increased cost of the proposed expanded seismic studies.⁷ PG&E's estimate of the cost to complete the seismic studies increased from \$16.73 million to \$64.25 million. We granted PG&E's request to re-open A.10-01-014.

The Scoping Memo of the re-opened proceeding included the following issues:

1. The scope of the seismic and tsunami studies identified by the applicant;
2. The costs of the studies; and whether they should be capped;
3. Whether shareholders of PG&E will bear a share of the costs;
4. Whether outside experts should be retained to review the planned studies and their costs; and
5. The structure of the IPRP authorized in D.10-08-003.⁸

In addition to PG&E, the Division of Ratepayer Advocates (DRA), the Alliance for Nuclear Responsibility (A4NR), and Southern California Edison Company (SCE) submitted testimony. A hearing was held on April 18, 2012, and the case was submitted on June 1, 2012.

⁶ Exhibit PG&E-3 at 2.

⁷ *Id.*

⁸ Assigned Commissioner's Scoping Memo and Ruling, A.10-01-014 (March 6, 2012).

3. Issues to be Decided

3.1. The Scope of the Seismic and Tsunami Studies Identified By the Applicant⁹

As recommended by the CEC, PG&E designed the seismic studies proposed in this application to supplement the ongoing seismic work that is done in PG&E's LTSP.¹⁰ The data that will be collected as a result of these studies have the potential to help PG&E further reduce the uncertainty of the seismic hazard at Diablo Canyon.¹¹

As PG&E implemented the seismic studies authorized in D.10-08-003, PG&E gained knowledge which enabled it to modify the scope of the seismic studies. In particular, PG&E determined that it should significantly expand the geographical areas of study for the 2-D/3-D offshore studies and the 2-D onshore studies.¹² PG&E made the decision after receiving input from third-party consultants, vendors, and the IPRP.¹³ PG&E also took into account the preliminary lessons learned from the accident at the Fukushima Dai-Ichi nuclear power plant in Japan and comments by United States Geological Survey (USGS) personnel questioning regional fault characterizations along the central coast of California.¹⁴ PG&E determined that collecting data from a broader geographical area allows for the integrated tectonic assessment of the interaction of faults in

⁹ PG&E has not proposed any tsunami studies in this application.

¹⁰ AB 1632 Report at 6.

¹¹ Exhibit PG&E-3 at 13. See also, Exhibit PG&E-1 at 2-6 to 2-7.

¹² Exhibit PG&E-1 at 1-2 to 1-3.

¹³ *Id.*

¹⁴ *Id.* See also, PG&E/Nishenko, Tr. at 69, lines 8-28.

the area and improves the ability to evaluate potential seismic hazards.¹⁵ The new seismic research projects are designed also to provide sufficient information for PG&E to respond to the Nuclear Regulatory Commission's (NRC) requirements for seismic hazard and risk analysis contained in the March 12, 2012 NRC Letter to All Power Reactor Licensees et al., Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident.

PG&E's proposed offshore and onshore 2-D and 3-D seismic studies do not duplicate studies already done by the USGS. The offshore studies proposed by PG&E in this application are much more specific than those performed by the USGS.¹⁶ PG&E's studies, including high-resolution, low energy 2-D and 3-D marine seismic mapping and the proposed high energy 3-D surveys, have been designed to provide the necessary spatial resolution to map both shallow and deeper structures in the area.¹⁷

Until the studies PG&E did following the approval of the initial \$16.73 million in funding, there had been no onshore reflection studies conducted in the Irish Hills region near Diablo Canyon comparable to those PG&E conducted in 2011 and plans for 2012.¹⁸ PG&E's onshore studies are designed to

¹⁵ Exhibit PG&E-3 at 2.

¹⁶ Exhibit PG&E-3 at 15.

¹⁷ *Id.*

¹⁸ Exhibit PG&E-3 at 15.

provide data to improve the constraints on the mechanism responsible for the progressive late Quaternary uplift of the Irish Hills.¹⁹

Expanding the survey areas from which seismic information for the 2-D/3-D offshore and 2-D onshore seismic studies is collected is consistent with the continuing safe operation of Diablo Canyon and with PG&E's commitment to support the activities necessary to ensure seismic safety.²⁰ It is also responsive to comments and feedback from the IPRP and to information from other stakeholders.²¹ Enhanced knowledge of the seismic hazard near Diablo Canyon provides a clear benefit to PG&E's customers as it enables PG&E to continue its safe operation.

A4NR offered the testimony of Dr. Douglas Hamilton, a member of PG&E's geoseismic licensing team for Diablo Canyon from 1971 to 1991. Dr. Hamilton's testimony focused on what he considered two major gaps in PG&E's studies:

- A continued lack of interest in the Diablo Cove Fault, a local fault on the Diablo Canyon Nuclear Power Plant site running from offshore directly under the turbine building and Unit 1 containment foundations.
- The "San Luis Range/Inferred Offshore Fault" in San Luis Obispo Bay, which A4NR says falls outside PG&E's target zone for enhanced studies. Dr. Hamilton testified that the existence of this structure is required in order to account for the level uplift of the Irish Hills/San Luis Range.

¹⁹ *Id.*

²⁰ Exhibit PG&E-1 at 1-3.

²¹ Exhibit PG&E-3 at 2.

A4NR recommends that we should direct PG&E to configure its onshore and offshore seismic surveys to specifically address Dr. Hamilton's testimony concerning the Diablo Cove Fault and the San Luis Range/Inferred Offshore Fault and their interaction.

A PG&E witness testified that PG&E was investigating both the Diablo Cove Fault and the San Luis Range/Inferred Onshore Fault. Therefore, PG&E says we need not take any action other than approving this application in order to implement A4NR's recommendations. We agree with PG&E. PG&E has said it will address the concerns of Dr. Hamilton. We expect PG&E to do so.

3.1.1. Seismic Survey Design

PG&E's seismic survey design lays the foundation for all of the project seismic survey activities. This design work includes purchasing and evaluating existing industry data, designing the 2-D/3-D offshore and 2-D onshore surveys, and evaluating and identifying permit and property access requirements.²² In addition to its in-house experts, PG&E retained third-party geophysical and environmental consultants to assist with this work. The original cost estimate approved by the Commission for these activities was \$500,000. Due to the proposed increased scope of the studies, the current seismic survey design cost estimate is \$900,000.

3.1.2. Offshore 2-D/3-D Seismic Surveys

PG&E proposes to expand the 3-D high-energy seismic-survey area from 400 kilometers squared (km²) to approximately 1,200 km². This much larger area includes the originally proposed 400 km² area from Point Buchon to

²² Exhibit PG&E-1 at 2-1 to 2-2. See also D.10-08-003 at 3-5.

Point San Luis and adds additional areas north of Point Buchon to Cambria and south of Point San Luis to Point Sal. In response to questions from the IPRP about the intersection of the Shoreline fault and the Hosgri fault and the Los Osos fault with other faults in Estero Bay, PG&E revised the survey racetrack in a more favorable orientation (east-west) to image the intersection of these faults at depth.²³

In addition to more than doubling the offshore area to be studied using 2-D and 3-D technology, PG&E is performing two types of 3-D seismic surveys: high-energy and low-energy.²⁴ The low-energy survey provides high-resolution imagery at subsurface depths of approximately 1/2 kilometer (km). The high-energy survey provides imagery at depths of up to 12 km, but provides poor resolution imagery at shallow depths, so the high- and low-energy technologies complement each other.²⁵ PG&E plans to perform high- and low-energy 2-D and 3-D surveys to illuminate shallow and deep structures and resolve uncertainties related to the Shoreline, Los Osos, and Hosgri/San Simeon fault zones. Understanding the geometry of these faults at seismogenic depths, coupled with slip rate information that PG&E hopes to obtain from the low-energy surveys, will improve PG&E's ability to define the seismic hazard in the region.²⁶

PG&E's initial cost estimate to conduct offshore 3-D, high-energy seismic surveys over a 400 km² survey area, from Point Buchon to Point San Luis, was

²³ Exhibit PG&E-5 at 4-5.

²⁴ Exhibit PG&E-1 at 2-2.

²⁵ *Id.*

²⁶ *Id.*

\$11 million.²⁷ The additional cost for more than doubling the area to be studied and for performing low-energy surveys in addition to high-energy surveys is \$35.8 million, for a total of \$46.8 million.²⁸

3.1.3. Onshore 2-D Seismic Surveys

Before moving to re-open this application, PG&E concluded that it should also expand the study area for the onshore 2-D seismic surveys and decided that it would be best to use two seismic sources to collect information.²⁹ In the Shoreline Fault Zone Report (PG&E 2011) submitted to the NRC, PG&E identified the Los Osos and San Luis Bay fault zones as having a deterministic seismic hazard that was comparable to the offshore Shoreline and Hosgri fault zones. Reducing the uncertainty in the source characterization (geometry, slip rate) of these fault zones will further define the seismic hazard at Diablo Canyon. Additionally, the data collected from the onshore 2-D surveys will provide constraints on the geometry and style of faulting beneath the Irish Hills.³⁰ Using this data, PG&E will develop a 3-D model of the geologic structure beneath the Irish Hills to address the geometry and rate of uplift of the hills and the distribution of hypocenters beneath the range.³¹

PG&E determined that it should implement 2-D seismic surveys rather than 3-D surveys onshore because of the difficulty and cost of using instruments

²⁷ Exhibit PG&E-1 at 2-2.

²⁸ Exhibit PG&E-1 at 2-3.

²⁹ Exhibit PG&E-1 at 2-7.

³⁰ Exhibit PG&E-3 at 14.

³¹ *Id.*

in rugged hilly terrain, as well as land ownership and environmental issues.³² Even then, the highly folded and deformed nature of the rocks in the Irish Hills region limits the resolution possible with conventional 2-D seismic surveys. In light of that reality, PG&E conducted computer-based illumination studies to optimize the proposed onshore source and receiver routes, which caused PG&E to modify the four survey routes it had originally proposed. This revised survey plan covers approximately 2.5 times the mileage originally proposed in 2010 and uses two types of seismic sources: (1) Vibroseis trucks for deep (approximately 10 km) penetration; and (2) Accelerated Weight Drop trucks for shallow (approximately 5 km) penetration and infilling in areas that the larger Vibroseis trucks are unable to access.³³ The additional line mileage, the deployment of geophones, and the use of two different types of seismic sources will enable improved imaging of fault structures at depth that will approach the resolution of conventional 3-D seismic coverage.³⁴

Given the significant increase in the scope of this work, the estimated costs for the data acquisition, processing, and interpretation have increased substantially from \$1.6 million to \$7.6 million.³⁵ In addition to these costs, additional costs were incurred to improve the geologic and geophysical mapping along the survey routes, conduct environmental reviews, conduct environmental compliance monitoring, map buried infrastructure along onshore survey routes in urban/suburban areas, and conduct traffic control during surveys. PG&E's

³² Exhibit PG&E-1 at 2-7.

³³ Exhibit PG&E-1 at 2-7 to 2-8.

³⁴ *Id.*

³⁵ *Id.*

initial estimate was \$2.03 million for four onshore 2-D seismic surveys (approximately 50 miles in length) included costs for actual survey planning (e.g., permitting and route surveying for source and receiver locations) and for data acquisition/processing and interpretation.³⁶ The revised estimate for the 2-D onshore studies is \$10.1 million.

3.1.4. Ocean Bottom Seismometer Installation (OBS)

The scope and cost of the OBS installation remains unchanged from that authorized in D.10-08-003.³⁷ As we noted in that decision:

PG&E proposes to purchase and install up to four ocean bottom seismometer (OBS) units offshore, on the west side of the known fault zones, to provide the critical seismological station coverage necessary to improve the quality of present earthquake monitoring locations. The earthquake location uncertainties will be reduced by having seismometers on both sides of the earthquake fault zones.³⁸

The activities associated with the OBS installation include: manufacture and delivery of the instrument packages; permits for installation; installation offshore, including determining the best locations; and obtaining, processing, modeling, and interpreting the data collected by the OBS equipment.³⁹ The estimated total cost for purchasing and installing the four OBS units is unchanged at \$2.05 million.⁴⁰

³⁶ Exhibit PG&E-1 at 2-7.

³⁷ Exhibit PG&E-1 at 1-4. See also PG&E/McLaren, Tr. 121, lines 17-25.

³⁸ D.10-08-003 at 8.

³⁹ *Id.*

⁴⁰ Exhibit PG&E-1 at 1-4.

3.1.5. Project Management

PG&E's initial cost estimate for project management was \$1.15 million. PG&E's revised cost estimate is \$4.4 million. This updated projection includes additional expenses for management activities and third-party oversight of a Nuclear Quality Assurance (NQA) program, as well as costs incurred to support the IPRP.⁴¹ These additional costs are approved as described below.

3.1.5.1. PG&E Labor and Personnel Support

PG&E's cost estimates for labor and personnel support, including activities to produce a final report, PG&E project management (to advise and review consultants' work, track scopes, and manage costs and schedules), and Diablo Canyon Power Plant personnel support (e.g., on-site work to support the OBS installation), have increased from approximately \$1.15 million to \$2.9 million.⁴²

3.1.5.2. Nuclear Quality Assurance Program

PG&E has determined that all of the geological and geophysical data collected as part of this program are subject to NQA program specifications and, accordingly, PG&E has initiated a NQA management and oversight program.⁴³ This program documents and verifies all seismic data acquisition processes and procedures, as well as data acquisition equipment, data processing software, data processing procedures, interpretation, and report preparation. All reports considered quality-related are prepared, reviewed, and approved according to

⁴¹ Exhibit PG&E-1 at 2-9.

⁴² *Id.*

⁴³ Exhibit PG&E-1 at 2-10.

NQA standards.⁴⁴ Project management costs for administering a NQA management and oversight program by an independent third party are estimated to be approximately \$0.63 million for three years.⁴⁵

3.1.5.3. Independent Peer Review Panel

The revised cost estimate includes \$0.95 million to support activities of the IPRP.⁴⁶ In D.10-08-003, we established the IPRP, whose members include the CEC, California Geological Survey, California Coastal Commission, and the California Seismic Safety Commission. More recently, the County/City of San Luis Obispo has become a member of the IPRP. The IPRP has reviewed and commented on PG&E's seismic-study plans.⁴⁷ The IPRP will also perform an independent review of and comment on the seismic-survey planning and study results.

3.1.5.4. Structure of the Independent Peer Review Panel

The IPRP for Diablo Canyon was established in D.10-08-003. In that decision we said:

In addition to PG&E's proposal to employ outside consultants and subject its seismic studies to peer review, this commission will convene its own Independent Peer Review Panel (IPRP). The commission will invite the CEC, the California Geologic Survey, the California Coastal Commission, and the California Seismic Safety Commission to participate on the panel. Under the auspices of the California Public Utilities Commission (CPUC), the panel will conduct a peer review of the seismic

⁴⁴ *Id.*

⁴⁵ *Id.*

⁴⁶ Exhibit PG&E-1 at 2-10.

⁴⁷ Exhibit PG&E-2 at 2-3.

studies including independently reviewing and commenting on the study plan and completed study findings. Our order in this application will require PG&E to submit its study plans and completed study findings to the IPRP for review prior to implementation. Should a dispute arise it should be resolved informally but if that is not attainable the Commission has authority to halt the associated rate recovery.

Costs incurred by PG&E to comply with directions issued by the IPRP shall be recovered in the [Diablo Canyon Seismic Studies Balancing Account] DCSSBA. The IPRP may employ consultants and experts. Costs incurred by the IPRP shall be reimbursed by PG&E and recovered in the DCSSBA.

In A.11-04-006, SCE requested authority to recover \$64 million operation and maintenance costs associated with the San Onofre Nuclear Generating Station (SONGS) Unit Nos. 2 and 3 ongoing seismic program and new seismic research projects and we granted that request in D.12-05-004, and provided an IPRP as we had done for PG&E in D.10-08-003. However, in the SONGS application we provided an IPRP structure somewhat different from the structure approved for PG&E in D.10-08-003. In the SONGS decision, we said:

The working environment in which the IPRP for Diablo Canyon conducts its business has proved to be cumbersome for prompt and efficient action. It was envisioned by the Commission that the IPRP would be a body of technical expert scientists who would in a collegial interaction be able to talk and discuss amongst themselves, develop ideas, comments and suggestions, and make recommendations to the utility.

There is a need to modify the way review is conducted. In addition to SCE's proposal to employ outside consultants and subject to seismic studies to peer review, the Commission's Energy Division Director will seek input from the CEC, the California Geologic Survey, and California Coastal Commission, the California Emergency Management Agency, and the California Seismic Safety Commission, as well as

outside experts, to participate in review of the seismic studies. The purpose of this directive is to leverage existing expertise within the public sector (interagency experts). The Energy Division Director will coordinate review of the seismic studies, including seeking comments on the study plan and completed study findings with the outside and interagency experts. Our order in this application will require SCE to submit its study plans and completed study findings to the Energy Division Director prior to implementation. To provide for public participation and allow for greater transparency, the Energy Division Director shall periodically hold publicly noticed workshops, and post relevant materials on the Commission's website.

As we explained in the SONGS seismic studies decision, the IPRP as a body of technical expert scientists needs to be able to talk and discuss ideas more freely amongst themselves to provide their assessment, input, and recommendations to the utility. For the same reasons, we shall modify the Diablo Canyon IPRP so that it conforms to the SONGS IPRP.

A4NR recommends that we should require PG&E to formally respond in writing to IPRP review comments, and where the company chooses not to accept such recommendations, PG&E should be required to document its scientific reasons for such rejection. We do not believe that such formality is needed. The record developed in this proceeding demonstrates that PG&E has been meeting regularly with the IPRP to review the seismic survey plans and has revised those plans in response to IPRP comments. We expect PG&E to continue to meet with the IPRP to present and review changes to the seismic study plans, to provide process updates to the IPRP regarding implementation of the studies, and to receive IPRP comments. To prescribe a fixed rule in this instance is not warranted.

3.2. The Costs of the Studies; and Whether They Should Be Capped

Because of the expanded scope of the proposed 2-D and 3-D offshore and onshore seismic studies, PG&E requests authority to collect in customer rates an additional \$47.5 million, bringing the total cost of the studies to \$64.25 million. PG&E designed the proposed seismic studies to use the advanced technologies recommended by the CEC to explore fault zones near Diablo Canyon.⁴⁸ These studies were also designed to address the CEC recommendation that PG&E assess the implications of a San Simeon type earthquake beneath Diablo Canyon.⁴⁹

PG&E expanded the scope of the offshore and onshore 2-D and 3-D seismic studies based on its experience during implementation of the initial scope of activities, as well as the preliminary lessons learned from the nuclear accident at the Fukushima Dai-Ichi nuclear power plant caused by the Tohoku Japan earthquake and subsequent tsunami.⁵⁰ The expanded study scope also reflects input from a number of third parties, including seismic consultants and vendors, environmental consultants, environmental agencies, the IPRP, and public comments from USGS personnel.⁵¹ As such, PG&E's proposed studies address not only the language of the CEC's AB 1632 Report recommendations,

⁴⁸ The IPRP states, "PG&E plans to perform these studies for on-shore and off-shore areas by using enhanced 2-D and 3-D reflection mapping and other advanced geophysical techniques to explore fault zones in the vicinity of the Diablo Canyon Power Plant, as recommended by the CEC AB 1632 Report." IPRP Report No. 3, Comments on PG&E's Enhanced Seismic Study Plans for Diablo Canyon Power Plant, April 6, 2012.

⁴⁹ Exhibit PG&E-3 at 14.

⁵⁰ Exhibit PG&E-1 at 1-2.

but also the goal behind them, namely to reduce the uncertainties of the seismic hazard at Diablo Canyon.

3.2.1. Enhanced Seismic Study Costs⁵²

Line No.	Activity	Original Estimate (\$ million)	Current Request (\$ million)
1.	Seismic Survey Design	\$0.5	\$0.9
2.	Offshore 2-D and 3-D (High Energy and Low Energy)	\$11.0	\$46.8
3.	Onshore 2-D	\$2.03	\$10.1
4.	OBS Installation	\$2.05	\$2.05
5.	Project Management	\$1.15	\$4.4
6.	Total	\$16.73	\$64.25

PG&E’s original estimates were based on a narrow scope of activities and estimates available from vendors at the time PG&E prepared its original application. The revised estimates reflect PG&E’s experience with the procurement and permitting processes, as well as the significantly increased scope of the offshore and onshore 2-D and 3-D studies.⁵³

3.2.2. The Commission Should Continue the Ratemaking Treatment Authorized in D.10-08-003 for the Initial Cost Estimate of \$16.73 Million

We approved a cost recovery and ratemaking methodology for the original scope of seismic studies in D.10-08-003. We will continue to use that existing ratemaking approach, with two revisions. First, PG&E requests that we increase

⁵¹ Exhibit PG&E-1 at 1-3. See also, PG&E/Nishenko, Tr. 69, lines 8-28.

⁵² Minor errors due to rounding. Exhibit PG&E-1 at 1-4.

⁵³ Exhibit PG&E-1 at 1-4.

the amount recoverable through the DCSSBA from \$16.73 million to \$64.25 million. Second, PG&E requests that it be allowed to include an allowance for Franchise Fees & Uncollectibles (FF&U). PG&E will continue to record its actual costs in the DCSSBA and, on an annual basis, PG&E will transfer up to the amount authorized by the Commission and an allowance for FF&U from the DCSSBA to the Utility Generation Balancing Account or its successor, as part of the Annual Electric True-Up for recovery through CPUC-jurisdictional rates.

If costs increase beyond the authorized amount of \$64.25 million (not including the allowance for FF&U), PG&E requests authority to track these costs in the DCSSBA and requests Commission authority to request cost recovery of the additional costs through the submission of a Tier 3 advice letter. While DRA recommends that the Commission require PG&E to file a new application or request recovery in PG&E's next general rate case should PG&E's seismic study costs increase beyond \$64.25 million,⁵⁴ PG&E does not believe it is necessary or efficient for the Commission to adopt DRA's recommendation. The advice letter process is an appropriate process through which to review unexpected, increased costs of activities previously approved by the Commission. It is a more efficient process than an application because Commission and intervenor review occurs on a faster schedule while still subjecting the costs to Commission review and approval.⁵⁵ In a recent decision the Commission stated that the Tier 3 advice letter process, "... provides many of the due process protections provided by the

⁵⁴ Exhibit DRA-1 at 1.

⁵⁵ D.12-05-004 at 13.

application process ...,” in that it is, “subject to protest by intervenors and disputed issues could go to hearing if the Commission desired.”⁵⁶

DRA recommends that PG&E stay within the authorized costs that the Commission adopts, i.e., a hard cost cap of \$64.25 million. DRA argues that there is a significant level of uncertainty surrounding those costs: (1) PG&E has already spent \$2.21 million⁵⁷ more than the \$16.7 million authorized in D.10-08-003 which raises doubts about their ability to forecasts costs, (2) PG&E has yet to finalize a contract with a 3-D seismic survey vendor, which represents the largest portion of the proposed costs, (3) PG&E forecasts a significant level of contingency in only one area,⁵⁸ which appears to understate the potential for cost overruns, (4) there may be up to \$25 million in additional mobilization/demobilization and permitting/mitigation costs related to California State Lands Commission and California Coastal Commission permits,⁵⁹ and (5) there is no long-term historical cost record.

Given the above uncertainties, DRA recommends that we put a hard cap of \$64.25 million on PG&E’s cost recovery request. If PG&E exceeds its current \$64.25 million forecast, then PG&E should be responsible for any cost overruns prior to its next general rate case (GRC). Ratepayer funding should be authorized for the \$64.25 million request only. PG&E can request additional funding and provide its justification in its Test Year 2017 GRC.

⁵⁶ *Id.*

⁵⁷ Exhibit DRA-3.

⁵⁸ Exhibit DRA-1 at 3, “PG&E’s original 16.73 million cost estimate did not contain any contingency amounts. [Footnote omitted.] PG&E’s updated cost estimates include a 25% weather down-time cost contingency of \$3.25 million. [Footnote omitted.]”

⁵⁹ Exhibit DRA-2.

PG&E's position is that a hard cap is unreasonable given the identified level of uncertainty associated with the seismic study costs. PG&E's witnesses testified it is quite possible that PG&E will have to incur reasonable costs in addition to the \$64.25 million supported in this application:

PG&E must note that there is some possibility for the costs to significantly increase even further if the California State Lands Commission or the California Coastal Commission do not permit 24/7 marine survey operations ..., if the permitting process delays implementation of the seismic surveys and if those state agencies require more significant environmental mitigation as a condition of permitting the projects.⁶⁰

PG&E argues that imposition of a hard cap may cause costs to increase further than would be necessary were no hard cap to be imposed, if contractors were to be mobilized and de-mobilized based on funding constraints. Creating this inefficiency by the imposition of a hard cap would make no sense for any reasonable utility activity, but it makes even less sense when you consider that the Commission itself has directed PG&E to perform these seismic studies. As such, the Commission should reject DRA's hard cap proposal.

We agree with PG&E. Placing a hard cap on seismic studies could cause a slowdown of the activity and could cause an increase in costs; two results to be avoided. All costs are subject to reasonableness reviews, which is our traditional method of controlling costs. PG&E may file a Tier 3 advice letter if costs exceed the \$64.25 million authorized by this decision.

⁶⁰ Exhibit PG&E-1 at 1-3 to 1-4. See also PG&E/Sharp, Tr. at 21 lines 2-28.

3.3. Whether Shareholders of PG&E Will Bear a Share of the Costs

A4NR recommends a ratepayer/shareholder cost sharing mechanism that would impose a portion of the seismic study costs on shareholders.⁶¹ PG&E argues that the Commission should reject this proposal as contrary to cost-of-service ratemaking applicable to these and all other reasonable and prudent costs of utility operations.⁶² Customers provide funding required to operate and maintain the investor-owned utilities' assets consistent with federal and state laws, regulations, and directives. The reasonableness of customer funding is assessed in periodic rate cases and applications like this one.⁶³ The Commission recently rejected a cost sharing proposal for similar seismic study costs, stating:

The legal standard for ratemaking is one of reasonableness. In meeting this standard, the Commission must afford a utility a reasonable opportunity to earn a return on its investments. This standard fails when reasonable and foreseeable expenses of utility operations are excluded from rates.⁶⁴

PG&E is conducting the seismic studies addressed in this application on the recommendation of the CEC and at the direction of the CPUC.⁶⁵ Additionally, enhanced knowledge of the seismic hazard near Diablo Canyon provides a clear benefit to PG&E's customers in that, as noted above, it enables

⁶¹ Exhibit A4NR-2 at 3.

⁶² Exhibit PG&E-3 at 17.

⁶³ *Id.*

⁶⁴ D.12-05-004 at 10.

⁶⁵ *Id.*

PG&E to continue the safe operation of this valuable generation resource.⁶⁶ We deny A4NR's cost sharing proposal and authorize PG&E to include the full costs of PG&E's seismic studies in customer rates.

3.4. Whether Outside Experts should be Retained

Because of the highly specialized technical knowledge required, A4NR states that it is essential to an informed review of the proposed seismic studies that the IPRP be afforded access to outside experts. This need was recognized by us in D.10-08-003, which declared, "The IPRP may employ consultants and experts. Costs incurred by the PRP shall be reimbursed by PG&E and recovered in the DCSSBA."⁶⁷ We have no in-house scientific or technical expertise to review seismic studies or perform analyses. Outside help is needed to ensure that the enhanced seismic studies are scoped out properly at the front end and reviewed properly during the course of the studies pursuant to the recommendations in AB 1632. To further that goal, the assigned Commissioner and the Administrative Law Judge (ALJ) granted the motion of San Luis Obispo County, a member of the IPRP, to approve a budget, not to exceed \$210,000 to retain a seismic expert on behalf of the IPRP. That Ruling was issued May 16, 2012 and is confirmed. We agree with A4NR that the IPRP should have an outside expert, and have provided the resources to obtain them.

⁶⁶ Exhibit PG&E-1 at 1-3. See also PG&E/O'Flanagan, Tr. at 128, lines 6-13.

⁶⁷ D.10-08-003 at 11. DCSSBA is the acronym for the Diablo Canyon Seismic Studies Balancing Account.

3.5. DRA's Proposed Reporting Requirements

DRA's recommends the following reporting requirement:

1. 30 days following Commission approval, PG&E should file a detailed seismic study plan and project schedule, with an updated cost estimate;
2. Every six months, PG&E should file a detailed report showing actual seismic study activities, their costs, and any revisions to the study plan;
3. The final seismic study report should be filed six months after the completion of the studies, anticipated in 2013; and
4. The DCSSBA should be subject to audit at the discretion of the Commission staff and DRA.

DRA argues that these reporting requirements should provide PG&E with guidance to manage the study process in a cost-efficient manner. The Commission should be concerned that not only has PG&E's cost estimate for completing the seismic studies quadrupled since the original application was filed over two years ago, but that there remains a high degree of uncertainty regarding the new cost estimate.

In our opinion, only points 2 and 4 are needed. There will be constant exchanges of information between PG&E, the IPRP, and other agencies; we should avoid adding more procedural requirements. A six-month report is adequate.

4. Comments on Proposed Decision

The proposed decision of the ALJ in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. Comments were filed by A4NR and DRA. Reply comments were filed by PG&E and SCE. A4NR and DRA essentially reiterated their positions which had been considered in the proposed decision and rejected. PG&E and SCE recommend

that the proposed decision be adopted without modification. We have reviewed the comments of A4NR and DRA and are of the opinion that modification of the proposed decision is not warranted.

5. Assignment of Proceeding

Michel Peter Florio is the assigned Commissioner and Robert Barnett is the assigned ALLJ in this proceeding.

Findings of Fact

1. The Diablo Canyon seismic activities described in A.10-01-014 attempt to respond to state regulatory objectives regarding assessing Diablo Canyon seismic conditions, including the CEC's AB 132 Report recommendation and direction from the Commission. The new seismic research projects are designed also to provide sufficient information for PG&E to respond to the NRC's requirements for seismic hazard and risk analysis contained in the March 12, 2012 NRC Letter to All Power Reactor Licensees et.al., Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident.

2. PG&E's cost estimate of \$64.25 million for the Diablo Canyon seismic activities described in A.10-01-014 is reasonable and should be adopted for ratemaking purposes.

3. The costs of the Diablo Canyon seismic activities are operation and maintenance expenses incurred in the ordinary and prudent course of business for the owners of Diablo Canyon.

4. The ratemaking mechanisms proposed by PG&E address the uncertainties associated with the scope of work and costs of the Diablo Canyon ongoing seismic program and proposed seismic and tsunami studies and risk assessment.

5. It is reasonably foreseeable that the costs for Diablo Canyon seismic activities may exceed the current estimates of \$64.25 million. PG&E should use the Tier 3 advice letter process for seeking recovery of additional funding for the Diablo Canyon seismic activities, which requires notice to the public and interested parties.

6. The seismic activities estimate of expenses are:

Line No.	Activity	Original Estimate (\$ million)	Current Request (\$ million)
1.	Seismic Survey Design	\$0.5	\$0.9
2.	Offshore 2-D and 3-D (High Energy and Low Energy)	\$11.0	\$46.8
3.	Onshore 2-D	\$2.03	\$10.1
4.	OBS Installation	\$2.05	\$2.05
5.	Project Management	\$1.15	\$4.4
6.	Total	\$16.73	\$64.25

Conclusions of Law

1. The planned scope for the Diablo Canyon seismic activities described in A.10-01-014 is in the public interest and is reasonable.

2. PG&E should proceed with the Diablo Canyon seismic activities described in A.10-01-014, as the Diablo Canyon seismic activities are in the public interest.

3. PG&E’s cost estimate of \$64.25 million for the Diablo Canyon seismic activities described in A.10-01-014 is reasonable and should be adopted for ratemaking purposes. The Energy Division should periodically review these expenditures and report to the Commission.

4. PG&E should be authorized to recover in rates the actual reasonable costs associated with the Diablo Canyon seismic activities, as described in A.10-01-014.

5. PG&E’s ratemaking proposal for recovery in rates its costs of the Diablo Canyon seismic activities is reasonable.

6. It is reasonable to allow PG&E to file a Tier 3 advice letter to seek the recovery of costs for Diablo Canyon seismic activities which may exceed the current estimate of \$64.25 million.

7. It is reasonable to leverage the existing expertise of state agencies to provide for independent peer review of the study plans and of the findings/results of the seismic studies approved and funded through this decision. Therefore, the Energy Division Director will coordinate with the CEC, the California Geologic Survey, the California Coastal Commission, the California Emergency Management Agency, and the California Seismic Safety Commission, as well as outside experts, to conduct a review and provide written comments on the study plans prior to implementation and to conduct a review and provide written comments on the findings and/or results of the studies.

8. The Commission by its orders in this proceeding does not intend to interfere with the NRC's requirements set forth in the NRC's March 12, 2012 50.54(f) letter.

9. The motion of San Luis Obispo County, a member of the IPRP, to approve a budget, not to exceed \$210,000, to retain a seismic expert on behalf of the IPRP was granted on May 16, 2012, and is confirmed.

O R D E R

IT IS ORDERED that:

1. Pacific Gas and Electric Company is authorized to record and recover its actual costs of implementing the Diablo Canyon seismic activities in the Diablo Canyon Seismic Studies Balancing Account up to \$64.25 million.

2. Costs recorded to the Diablo Canyon Seismic Studies Balancing Account shall include costs for Pacific Gas and Electric Company's

(PG&E) implementation of the California Energy Commission's Assembly Bill 1632 Report recommendations that PG&E perform additional seismic studies using offshore and onshore seismic imaging, and other advanced techniques.

3. Pacific Gas and Electric Company (PG&E) is authorized to file a Tier 3 advice letter to obtain Commission authorization to record in the Diablo Canyon Seismic Studies Balancing Account any additional operation and maintenance costs that are in excess of \$64.25 million. The Tier 3 advice letter should be served on the service list for this proceeding and PG&E shall be required to provide notice of a potential rate increase to customers.

4. Costs recorded to the Diablo Canyon Seismic Studies Balancing Account (DCSSBA) shall be recovered in Pacific Gas and Electric Company's (PG&E) annual Energy Resource Recovery Account Compliance proceedings, where PG&E will provide support for the amounts actually incurred and recorded in the DCSSBA and consistent with PG&E's request in this application and any subsequent Tier 3 advice letters.

5. Pacific Gas and Electric Company (PG&E) shall modify its Diablo Canyon Seismic Studies Balancing Account (DCSSBA) to specify that disposition of balances in the DCSSBA shall be recovered in PG&E's annual Energy Resource Recovery Account Compliance proceeding.

6. The Energy Division Director will coordinate with the California Energy Commission, the California Geologic Survey, the California Coastal Commission, the California Emergency Management Agency, and the California Seismic Safety Commission, as well as outside experts, to review and provide written comments on the study plans prior to implementation and to conduct a review and provide written comments on the findings and/or results of the studies. The

Energy Division Director shall periodically hold publicly noticed workshops, and post relevant materials on the Commission's website.

7. Pacific Gas and Electric Company (PG&E) shall provide the Energy Division Director with its plans for seismic research projects. The failure of the Energy Division Director to provide written comments within 30 days shall not delay PG&E in implementing its plans.

8. Pacific Gas and Electric Company (PG&E) shall provide the Energy Division Director the findings and/or results associated with the seismic research projects upon finalizing those findings and/or results. The failure of the Energy Division Director to provide written comments within 30 days shall not delay PG&E in implementing its findings and/or results.

9. Pacific Gas and Electric Company (PG&E) shall record its share of the costs of Energy Division Director's expert review that are billed to PG&E in the Independent Peer Review Panel subaccount of its Diablo Canyon Seismic Studies Balancing Account.

10. Costs recorded in the Independent Peer Review Panel subaccount of Pacific Gas and Electric Company's (PG&E) shall be recovered in PG&E's annual Energy Resource Recovery Account Compliance proceedings, where PG&E will provide support for the amounts actually incurred and recorded in the Energy Division Director's review memorandum account and consistent with PG&E's request in this application and any subsequent Tier 3 advice letters.

11. Within 10 days of the effective date of this Order, Pacific Gas and Electric Company's (PG&E) shall file a Tier 1 advice letter to modify Electric Preliminary Statement Part FM, Diablo Canyon Seismic Studies Balancing Account (DCSSBA), to specify that disposition of balances in the DCSSBA, including balances recorded in the Independent Peer Review Panel subaccount, shall be

recovered in PG&E's annual Energy Resource Recovery Account Compliance proceedings. The advice letter shall be effective on the date filed, subject to Energy Division determining that it is in compliance with this Order.

12. Application 10-01-014 is closed.

This order is effective today.

Dated September 13, 2012, at San Francisco, California.

MICHAEL R. PEEVEY

President

TIMOTHY ALAN SIMON

MICHEL PETER FLORIO

CATHERINE J.K. SANDOVAL

MARK J. FERRON

Commissioners