California State Auditor

BUREAU OF STATE AUDITS

# California Earthquake Authority:

***It Has Taken Steps to Control High Reinsurance Costs, but As Yet Its Mitigation Program Has Had Limited Success***


February 2001
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# CALIFORNIA STATE AUDITOR

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February 28, 2001 2000-133

The Governor of California
President pro Tempore of the Senate
Speaker of the Assembly
State Capitol
Sacramento, California 95814

Dear Governor and Legislative Leaders:

As requested by the Joint Legislative Audit Committee, the Bureau of State Audits presents its audit report concerning the California Earthquake Authority's (authority) expenditures for reinsurance and its implementation of its State Assistance for Earthquake Retrofitting (SAFER) pilot program.

This report concludes the authority's high rate in 1998 that was an initial cause for concern was primarily due to one-time factors during its first two years of operations. The authority's reinsurance costs are still high, but not unreasonable, because it is highly dependent on outside sources, such as reinsurance, to pay its policyholders' claims in the event of an earthquake and because of unique restrictions the law places on the authority. However, the authority has succeeded in reducing these costs by negotiating favorable amendments to its contracts and exercising options that may reduce its reliance on reinsurance. In addition, it is too early to fully assess the SAFER program's effectiveness in achieving retrofits because the authority does not have sufficient data from homeowners who may have completed retrofit improvements outside of the SAFER program. However, as yet the small number of homeowners who made seismic improvements through the SAFER program indicates that the program has not been successful. Finally, the authority is reducing its backlog of seismic inspections for homeowners and the remaining assessments should be mailed to homeowners by mid-May 2001.

Respectfully submitted,

Elaine M. Howle

ELAINE M. HOWLE
State Auditor

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# SUMMARY

***Audit Highlights . . .***

***Our review of the California Earthquake Authority's (authority) reinsurance costs and State Assistance for Earthquake Retrofitting (SAFER) program disclosed:***

- ☑ ***The authority's reinsurance costs are high, but not unreasonable compared to what other companies are paying.***
- ☑ ***The authority has reduced its reinsurance costs by negotiating favorable contract terms and exercising contract options.***
- ☑ ***As of December 2000, only 31 of 3,576 homeowners whose homes needed structural retrofits had made them.***
- ☑ ***The remaining backlog of seismic inspections and assessments should be completed and mailed to homeowners by mid-May 2001.***
- ☑ ***The authority has spent $3.5 million on SAFER, which is within its statutory requirement.***

## RESULTS IN BRIEF

In 1996, following a residential property insurance crisis precipitated by the Northridge earthquake, the Legislature created the California Earthquake Authority (authority) to provide California homeowners with earthquake insurance. Working through 18 member companies, the authority insures more than 830,000 homes against earthquake damage, accounting for nearly two-thirds of the residential earthquake insurance market in California. By law, the authority was intended to depend highly on outside sources such as reinsurance (insurance that an insurance company purchases to cover a portion of its potential losses) and assessments on its member companies, giving it a direct source of payments to its policyholders in the event of a loss. Because an earthquake can cause extensive losses, its reinsurance coverage is costly, but without it the authority might not have the resources to pay for the losses arising from a major earthquake. The authority's reinsurance costs are high but not unreasonable, and the authority has succeeded in reducing those costs while maintaining a level of coverage that it believes is prudent.

The authority maintains roughly $2.5 billion in reinsurance coverage, which makes up about one-third of its capacity to pay policyholders in the event of an earthquake. Because catastrophe reinsurance is more expensive than other types of reinsurance, and because the authority must offer earthquake insurance to all qualified homeowners throughout the State, the reinsurance it purchases is costly. The authority's reinsurance costs are higher than other insurance companies because of its unique restrictions. By law, it must offer earthquake coverage statewide, so it cannot reduce its exposure to loss by limiting coverage in geographic areas that are highly prone to earthquake damage.

In 1998 the authority's rate (the percentage of policyholder premiums it spent for reinsurance) was 90 percent, according to its audited financial statements. This was due primarily to reinsurance costs that were not allocated evenly over the life of its original two-year contract for the first $1.4 billion of reinsurance coverage. The authority's member companies had existing earthquake policies that would be converted to authority policies

over the course of its first year of operation. During that year, the authority's exposure level gradually increased until it reached its full amount when the conversion was complete. Therefore, the payment schedule was set up to reflect the fact that the authority would have considerably more risk to cover in 1998 than it had in 1997. Additionally, the contract for the remaining $1.1 billion of reinsurance coverage required the authority to pay for two years of coverage in calendar year 1998. Therefore, although the authority's 1998 rate seems alarmingly high, this rate is due primarily to a high reinsurance premium split unevenly over a two-year contract and a required up-front premium in the second contract.

Nevertheless, the authority has taken steps to reduce its reinsurance costs while maintaining the required amount of reinsurance coverage. For example, it negotiated with its reinsurers to reimburse a portion of the premiums on the first layer of reinsurance if they sustained no losses under the contract for calendar years 1997 through 1999. This, coupled with a reinsurance premium adjustment due to the authority's exposure falling below 90 percent of $203.6 billion, resulted in a reinsurance refund of nearly $82 million for its first three calendar years. Moreover, according to its lead reinsurance intermediary, hired by the authority to negotiate its reinsurance contracts, the rate-on-line (the amount of compensation the authority currently pays to reinsurance companies to assume part of its risk) is not unreasonable compared to what other companies are paying.

The authority is also attempting to lessen its reliance on reinsurance by following the advice of its consultant to reduce the amount of coverage it buys and by testing its ability to transfer some of its earthquake risk into the capital market. Specifically, the authority's governing board has recently approved the authority's proposal to elect a contract option that reduces the amount of reinsurance coverage it purchases under one of its contracts by half, beginning April 1, 2001. In addition, the authority has recently contracted with one of its reinsurers to sell insurance-linked securities to selected institutional investors, who risk losing their investment if insurance industry-wide losses exceed a specified amount. However, the authority faces challenges in maintaining its claims-paying capacity because its reinsurance contracts will expire in the next two years and its authority to assess its member companies up to $2.2 billion when losses exceed its capital will expire in December 2008.

In addition to providing residential earthquake insurance, the authority administers an earthquake mitigation pilot program, which is currently in its second phase, called State Assistance for Earthquake Retrofitting (SAFER). Under its SAFER program, which is intended to reduce earthquake-related personal and business economic losses in the State, the authority uses some of the interest earned on premiums from its policyholders to provide free seismic assessments to all homeowners in the pilot counties whose homes meet certain eligibility criteria. Among other requirements, a home must have been built before 1979 to be eligible for the SAFER program. The authority believes that it must offer its earthquake mitigation program to all owners of eligible homes-even if the home is not covered by a policy issued by the authority-to maintain its current federal tax status. Between October and December 1999, after a great deal of media attention, the SAFER program received nearly 17,000 telephone calls from interested consumers, resulting in 8,304 qualified homeowners interested in receiving a seismic assessment of their homes. To meet this unexpected demand and the resulting backlog of inspections, the authority increased the number of engineering firms that conduct the inspections and prepare assessment reports. As of early December 2000, the authority had spent about $3.5 million for its earthquake mitigation program, had completed roughly 68 percent of the home inspections, and had sent 86 percent of these homeowners their assessment reports. According to the authority, the remaining inspections and assessment reports should be complete and mailed to homeowners by mid-May 2001.

However, the authority has not yet found an effective mix of incentives to encourage homeowners to retrofit their homes, and the number of homes that have been retrofitted is low. Thus, although the authority has spent approximately $3.5 million for the SAFER program, it cannot demonstrate it has achieved its ultimate goal of reducing the State's risk of personal and business economic loss from earthquakes. As of December 8, 2000, only 31, or 0.9 percent, of 3,576 homeowners whose homes needed structural retrofit improvements had completed the needed improvements through the SAFER program. Another 54 homeowners had begun the retrofitting process, but the work was not complete. A telephone survey in January 2001 of 300 homeowners who participated in the SAFER program needs more analysis before the authority can use it to estimate how many other homeowners who received seismic assessments through the SAFER program made some or all of the necessary improvements but did not report them.

## RECOMMENDATIONS

To ensure that it maintains its claims-paying capacity, the authority should continue to monitor the reinsurance market and research alternative financing to reduce its dependence on reinsurance.

To ensure that the goal of the mitigation program is achieved, the authority should establish a system for determining how many homeowners who participate in the SAFER program complete the recommended retrofit improvements. The authority should also establish a target number of homes to be made seismically secure so it can demonstrate that the goal of the program has been achieved. Until these elements are in place, the authority should delay expanding the program.

To further encourage homeowners to protect their homes from the peril of earthquakes, the authority should continue to research why more homeowners who received assessment reports have not followed through with retrofitting their homes. Once the authority identifies the reasons, it should make appropriate changes before expanding the program.

## AGENCY COMMENTS

The authority generally concurs with our conclusions and recommendations. In particular, it agrees with the factors we identified as contributing to high reinsurance costs and that it is too early to determine the full level of success of the SAFER program. However, the authority believes the SAFER program is an emerging success, in part, because a large number of the homeowners responding to its survey have made or plan to make retrofit improvements. In addition, the authority believes that the SAFER program is successful because it has made a large number of homeowners aware of the steps required to retrofit their homes. ■

# INTRODUCTION

## BACKGROUND

The California Legislature created the California Earthquake Authority (authority) in December 1996, in response to the residential property insurance crisis precipitated by the 1994 Northridge earthquake. By law, insurance companies that sell homeowners insurance must also offer earthquake insurance. However, insurance companies incurred such heavy financial losses from the Northridge earthquake that many refused to sell homeowners insurance policies in California rather than expose themselves to further losses from the earthquake policies. The authority is a privately funded, publicly managed organization established to provide residential earthquake insurance policies to California citizens.

The authority is administered under the authority of the California State Insurance Commissioner and is governed by a 3-member board consisting of the governor, the treasurer, and the insurance commissioner. Currently, the board is reassessing the financial and organizational structure of the authority. The authority issues basic residential earthquake insurance policies through its 18 member insurance companies. The basic, or minimum-coverage, policy is intended to provide assistance in repairing the structure of the insured home and to help replace basic contents, such as a refrigerator and stove. These policies have a 15 percent deductible for damage to the primary dwelling, and they have a number of exclusions, such as repairs to plaster and detached garages. They also provide up to $5,000 for damage to contents and personal possessions, $1,500 for emergency living expenses, and $10,000 for building code upgrades. This means that for a home with an insured value of $300,000, the authority would pay for covered damages above the deductible of $45,000 up to a maximum of $300,000, and the homeowner would be responsible for the covered damages up to $45,000. Moreover, a typical homeowner policy for the same home provides up to $210,000 for fire damage to contents. Thus, the $5,000 allowance for contents in the earthquake policy demonstrates that the policy is not designed to completely restore the entire contents of the home.

Any owner of a qualifying residential property, including a condominium, can purchase an earthquake policy, as long as the property is insured by one of the member companies. To qualify, the home cannot have any preexisting unrepaired structural earthquake damage. The authority also issues earthquake policies to renters for personal property losses.

As the memory of the Northridge earthquake has faded, more private insurance companies have entered the earthquake insurance market and have taken market share away from the authority. Because these insurance companies can limit the number of homeowners they insure in higher-risk areas, the authority, which does not have the ability to limit its policy distribution, could be left with only the higher-risk policies if this trend continues. According to a report prepared by the Department of Insurance (department), the authority had 65.75 percent of the residential earthquake insurance market in California in 1999 and 66.62 percent of the market in 1998. The Appendix shows the distribution of the authority's policies statewide by earthquake zone. Approximately two-thirds of its policies cover homes in the two zones that are at highest risk of losses from earthquakes. In 1999, the three largest market shares after the authority were held by GeoVera Insurance Company, SAFECO Group, and Pacific Select Property and Casualty Insurance Company, with market shares of 6.59 percent, 3.88 percent, and 3.70 percent, respectively.

In addition to offering residential earthquake insurance, the authority administers an earthquake mitigation pilot program established to provide financial assistance to homeowners to offset the cost of making earthquake retrofit improvements to their homes. Retrofitting all older homes-not just those covered by an authority policy-should reduce not only the amount of potential damage to these homes but also the likelihood that they will cause damage to other homes and businesses. Business losses may include losses incurred by insurance companies that would pay claims filed for automobiles damaged by houses that collapse because they are not adequately bolted to their foundations, or for damage from fires caused by water heaters that are not adequately braced. Other types of business losses can occur if residential fires spread to commercial buildings or if workers are unable to return to work because their homes are extensively damaged.

The authority is currently working on the second phase of this earthquake mitigation effort, the State Assistance for Earthquake Retrofitting (SAFER) program. The authority is required by law to set aside $5 million or 5 percent of the interest it earns on premiums invested, whichever is less, to fund the program, if its actuaries determine that the payment will not impair the financial integrity of the authority. Under the SAFER program, the authority offers homeowners detailed assessments of the seismic risk of their homes and low-interest loans, through a Federal National Mortgage Association approved lender, to help pay for seismic improvements. In addition, the authority offers a 5 percent reduction in earthquake insurance premiums to homeowners who have made recommended improvements to their homes or whose homes have passed a retrofit inspection.

To qualify for the SAFER program, the homeowner's property must fit the following criteria:

- Be a single-family dwelling of wood frame construction that is not a manufactured or mobile home.
- Have been constructed prior to 1979.
- Have no preexisting damage that would jeopardize the efficacy of the seismic retrofit.
- Have a crawl space under the home.

The authority offers this program to all homeowners whose residences qualify for the program, not just to those who have earthquake policies issued by the authority. Although its policyholder premiums are the basis for the program's funding, the authority believes that, in order to maintain its federal tax status, the Internal Revenue Service requires it to open the program in this way. According to the authority, it is not subject to federal taxation because it is substantially controlled by the State through a governing board, and thus, like a state agency, it should not limit its services to the small percentage of the population that purchases its policies. As a result, many homeowners who receive a seismic assessment of their homes may hold earthquake insurance policies from other companies or have no earthquake policy at all.

## SCOPE AND METHODOLOGY

The Joint Legislative Audit Committee (audit committee) requested the Bureau of State Audits to perform an audit of the policies and practices for expenditures made on reinsurance and capital market contracts by the authority. Specifically, the audit committee asked us to determine whether the total annual expenditures for reinsurance and capital market contracts constitute a reasonable and appropriate percentage of the authority's annual collected premiums. The audit committee also asked us to examine the authority's implementation of its SAFER program.

To obtain an understanding of the laws and regulations governing the authority and the SAFER program, we reviewed the applicable California laws and regulations, as well as pertinent opinions by the Internal Revenue Service and the California Attorney General's Office. We also interviewed management and staff at the authority, at the department, and at E. W. Blanch Company (the authority's lead intermediary).

To obtain an understanding of the adequacy of the authority's operations based upon various actuarial opinions, we reviewed the relevant reports and supporting documentation when necessary.

To obtain assurance regarding the reasonableness of the authority's reinsurance and capital market expenditures, we interviewed authority and department management. We reviewed the authority's enacting legislation, which provides specific guidelines as to the nature and structure of its financing and operations. Additionally, we reviewed the terms of the reinsurance contracts and the subsequent addendums to the contracts. We spoke with E. W. Blanch Company personnel to gain an understanding of the circumstances under which the original contracts were negotiated. We also reviewed and analyzed the authority's audited financial statements with respect to reinsurance expenditures as well as documentation regarding any refunded portions of its reinsurance premiums.

Finally, to determine the progress made by the earthquake mitigation pilot program, we reviewed the underlying legislation and interviewed authority management and QuakeSAFE (the main engineering contractor) personnel. Additionally, we obtained and analyzed the authority's backlog of retrofit assessments and

evidence of available funding to confirm the SAFER program's estimated completion date. We also verified that the authority stayed within the required $5 million or 5 percent of its investment income to operate the SAFER program. ■

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# CHAPTER 1

## *The Authority's Reinsurance Costs Are Not Unreasonable*

### CHAPTER SUMMARY

The legislation that created the California Earthquake Authority (authority) requires it to maintain enough financial resources to cover policyholder claims in the event of an earthquake. Without expensive reinsurance (insurance that an insurance company purchases to cover its portion of a potential loss), the authority's ability to pay claims would be compromised. According to its lead reinsurance intermediary, hired by the board to negotiate for its reinsurance, the amount of compensation the authority is currently paying its reinsurers to assume part of its risk is not unreasonable compared to what other companies are paying. Like private insurance companies that sell catastrophe insurance, the authority contracts with a catastrophe modeling firm to estimate probable maximum loss and, thus, its ability to operate over a certain period of time. Based on the results of this modeling, the authority determined that it needed $2.5 billion in reinsurance to continue operating over the next 15 years. The high cost of this amount of reinsurance resulted from the following factors:

- In December 1996, when the authority was formed, the insurance market was reluctant to accept earthquake risk because of the losses it sustained as a result of the 1994 Northridge earthquake.

- Reinsurers would have been unwilling to commit a large amount of their capacity to the authority. The amount of reinsurance the authority needed, along with the associated risk, was the most ever purchased by a single entity.

- Because the authority was a new and unique entity, it was not in a strategic position to negotiate a lower price. Thus, the premiums reflected in its reinsurance contracts were high.

- Unlike other insurance companies, the authority is required by law to offer earthquake coverage statewide to all qualified homeowners. Thus, it cannot reduce its exposure to loss by refusing to sell policies in areas where earthquakes are likely to occur.

- By statute, the authority is limited to earthquake insurance only and therefore cannot spread its risk over multiple lines of insurance as many insurance companies do.

- The reinsurance that the authority purchases is in the form of aggregate coverage, which covers multiple events over a contract period, as opposed to the more common occurrence coverage, which covers single events.

Despite these factors, as the reinsurance market has become more receptive to the authority and competition has increased, the authority has taken steps to reduce its reinsurance costs while maintaining the required amount of reinsurance coverage. In one such step, it has negotiated an amendment to one of its reinsurance contracts for a "no-claims bonus" clause, which requires the reinsurers to refund part of the premiums if they sustain no losses under the contract covering calendar years 1997 through 1999. The amendments resulted in the authority receiving a refund of nearly $82 million.

## THE AUTHORITY'S HIGH RATE IN 1998 WAS DUE TO ONE-TIME FACTORS

Two ratios that give different but useful perspectives concerning reinsurance costs are the "rate-on-line" (ROL) and the "rate." The ROL, commonly used by the insurance industry to analyze reinsurance costs, is calculated by dividing the reinsurance premium by the amount of reinsurance purchased. Similar to the interest rate on a loan, the ROL is negotiated between buyer and seller and expresses the amount of compensation a reinsurance company wants in return for assuming a specified amount of risk over a certain time. We discuss the reasonableness of the authority's ROL in a later section. The other ratio, the rate, is calculated by dividing the reinsurance premium by the total policyholder premiums and can be used as a benchmark when analyzing the percentage of policyholder premiums spent for reinsurance. These ratios are not mutually exclusive, and both are used throughout the industry in analyzing and monitoring reinsurance costs. The text box at the left shows the equations for the two ratios.

**Comparison of the Rate-on-Line and Rate Ratios**

$$\text{ROL} = \frac{\text{reinsurance premium}}{\text{amount of reinsurance purchased}}$$

$$\text{Rate} = \frac{\text{reinsurance premium}}{\text{total policyholder premiums}}$$

***Unevenly allocated premiums on one contract and a prepayment requirement on another contributed to the high reinsurance rate in 1998.***

According to the authority's audited financial statements, its rate in calendar year 1998 was 90 percent. Because in calendar year 1997 its rate had been only 67 percent, the higher rate in 1998 was initially a cause for concern. However, the 1998 rate primarily reflects the fact that the authority had built a 12-month conversion period into its premiums. During this period, existing earthquake policies held by its member companies were gradually converted into the authority's policies. Because the authority's exposure to loss did not reach the total amount until this conversion was complete in 1998, it had considerably more risk to cover that year than in 1997, so its premiums for 1998 were higher, causing its rate to increase significantly. As a result, the costs were not evenly allocated over the life of the contract, causing the rate to appear to increase drastically between the two years. In addition, the premiums for the first $1.4 billion of reinsurance coverage under the original two-year contract (calendar years 1997 and 1998) were very high due to a reluctant market, among other factors. Finally, the second contract for the remaining $1.1 billion in reinsurance coverage required the authority to pay for two years' worth of coverage in calendar year 1998, which further contributed to the high rate in that year. As we discuss later, the authority's rate for 1998 was actually 83 percent, when bonuses and refunds from reinsurers are taken into account.

## THE AUTHORITY'S CAPACITY TO PAY CLAIMS RELIES HEAVILY ON COSTLY REINSURANCE

The authority's enabling legislation specifies a layered claims-paying structure that is to be triggered in order, beginning with its available capital. Because the authority must maintain a minimum capital base of $350 million, all layers, as they come into play, are to be used to pay existing policyholder claims and restore the authority's capital to the $350 million base. The only exception is the revenue bond layer, which is to be used only to pay claims to policyholders.

Like private insurance companies, the authority contracts with a catastrophe modeling firm, which uses a scientifically developed model that measures earthquake risk to estimate the authority's probable maximum loss arising from an earthquake and thus its ability to operate over a certain period of time. Based on the results of this modeling, the authority determined that it needed $2.5 billion in reinsurance to continue operating over a period of 15 years.

## FIGURE 1

### California Earthquake Authority Sources to Pay Claims (in Order Accessed) as of November 30, 2000

| Source | Description |
|---|---|
| Authority capital - $736 million | |
| First assessment on member insurance companies $2.2 billion | The authority's statute allows for two separate assessments of the authority' s member insurance companies for claims-paying purposes. In the event that the authority must pay claims that reduce its available capital below $350 million, the authority's first assessment of its member insurance companies becomes available. The first assessment will no longer be available to the authority after 2008. The total amount of the assessment for the first layer is based on the member insurance companies' cumulative share of the residential insurance market in 1996. |
| Reinsurance—first layer $1.4 billion | The first layer of reinsurance becomes available once the funds from the first assessment of the member insurance companies are exhausted. The contract for this layer expires December 31, 2001. |
| Line of credit $716 million | If earthquake losses exceed the funds provided by the first layer of reinsurance, the treasurer, with the approval of the authority's governing board, may then sell revenue bonds or arrange for debt financing. The value of the bonds or debt financing is determined by the authority's governing board and is not to exceed $1 billion to be paid back using a surcharge on all authority policies of up to 20 percent of the individual policy premiums annually. |
| Reinsurance—second layer $1.1 billion | The authority's original intent was to have this second reinsurance layer be a capital market layer. However, until recently the authority was unable to successfully negotiate a feasible and beneficial contract, due in large part to the fact that this is a very new and largely untested area of the market. The authority, however, has recently signed a contract under which the reinsurer will provide $100 million of coverage for the authority's first reinsurance layer, and will attempt to transfer its risk of losing that amount to the capital market. The contract for the second reinsurance layer expires March 31, 2002. |
| Second assessment on member insurance companies $1.5 billion | The second assessment on member insurance companies becomes available to the authority once all other funding mechanisms are exhausted. The total amount of the assessment is based on the member insurance companies' cumulative share of the residential insurance market in 1996. |
| **Total claims-paying capacity $7.6 billion** | |

As Figure 1 shows, the authority was intended to be highly dependent on outside sources, such as reinsurance and assessments on its member companies, as a direct source of funds to pay policyholders in the event of a loss. In fact, reinsurance constitutes approximately one-third of the authority's ability to pay its policyholder claims. According to the authority's lead reinsurance intermediary, reinsurers' expected profit margins are typically higher on property catastrophe business than for other

*The authority buys a large amount of catastrophe reinsurance, which is expensive due to the unpredictable nature of catastrophes.*

types of events, such as automobile accidents. This is because catastrophe losses are less predictable. Moreover, according to the authority's lead reinsurance intermediary, reinsurers' expected profit margins on the authority's account are also relatively higher because the authority purchases a large amount of catastrophe reinsurance. In calendar year 1999, the authority's reinsurance rate was 58 percent-that is, the $242.8 million it spent for reinsurance was 58 percent of the total premiums from its policies ($417.5 million). The authority estimates that for calendar year 2000, its reinsurance rate will be 53 percent.

### The Authority's Unique Nature Contributes to High Reinsurance Costs

According to Tillinghast-Towers Perrin (Tillinghast), a consulting firm hired by the authority's governing board to conduct an actuarial, financial, and management review, the authority's expensive reinsurance is not unreasonable. Rather, the high cost is attributable to its unique nature. For example, not only are earthquake losses expensive to reimburse because earthquakes can affect a large percentage of the authority's policyholders, but the law does not allow it to refuse to provide policies to high-risk homeowners. The Tillinghast report asserts that compensation for risk is a substantial element of the cost for reinsurance, especially for higher-risk coverage. Further, according to its lead reinsurance intermediary, the authority is at the riskiest end of a high-risk business. Like the premiums for an umbrella insurance policy that provides coverage for events such as severe automobile accidents in which losses exceed the typical automobile insurance policy, the authority's reinsurance costs are based on the statistical probability that a catastrophic event or series of catastrophic events will occur. One difference between umbrella coverage and the overall coverage the authority provides its policyholders is that, while extreme automobile accidents can result in significant losses in medical bills and legal fees, the likelihood is low that a large percentage of policyholders will be affected by the same automobile accident. In contrast, the likelihood is high that the same earthquake will affect many of the authority's policy-holders, who will file claims for payment to cover their losses. This contributes to making residential earthquake insurance a high-risk business.

In addition to its dependence on reinsurance, the authority's reinsurance costs are affected by several other factors-factors that do not pertain to other insurance companies dealing in catastrophe insurance. They include the newness of the authority

and the restrictions on its ability to limit its exposure to loss or to offset its losses with other types of income. For example, the authority lacks the ability to limit its exposure in high-risk areas and to maximize exposure in low-risk areas because its legislation precludes it from selectively choosing its customers. It must offer a policy to all owners of qualified residential property within the State who have purchased a homeowners insurance policy from one of its member companies. Nevertheless, the authority is able to offset a portion of its risk by selling policies in areas in which the risk of earthquake losses is lower. As of October 12, 2000, approximately one-third of the authority's policyholders lives in lower-risk areas. The Appendix shows the geographic distribution of the authority's policyholders.

***The authority pays high reinsurance costs because the law restricts its ability to limit its exposure to loss or to offset losses with other types of income.***

The authority is also statutorily limited to one line of insurance. Section 10089.6(a) of the California Insurance Code (code) limits the authority's business to earthquake insurance on residential properties. As a result, it is unable to spread its losses over other, less risky lines of insurance. According to the authority, insurance companies that offer multiple lines of insurance, such as homeowners and automobile, can offset losses that occur in lines where losses are significant and unpredictable with surpluses from other insurance lines with more predictable or less significant losses. Moreover, the authority is not part of an insurance pool and does not have a parent company to share its losses.

According to Tillinghast, another reason the authority pays a high price for reinsurance is that it provides an aggregate form of coverage, rather than the traditional occurrence form. Aggregate coverage covers multiple events during the contract period. Occurrence coverage is for a single event. In addition, according to its lead reinsurance intermediary, the amount of reinsurance the authority needed, along with the associated risk it needed to spread, was the largest ever purchased by a single entity. Because the authority was seeking to purchase roughly $2.5 billion of reinsurance in a limited market, it is likely that reinsurers were unwilling to commit so much of their capacity to one entity, and take on such a large amount of risk, unless they were offered an attractive return.

Tillinghast also pointed out in its report that as a result of the Northridge earthquake, reinsurers were not particularly receptive to covering or insuring earthquake risk in California. At the time of the contract negotiation, the record insured losses caused by the Northridge earthquake were still fresh in the reinsurers'

minds. The Northridge earthquake also caused reinsurers to lose confidence in the reliability of the earthquake models then in use because they did not adequately prepare the insurance industry for the extensive losses resulting from that earthquake.

### The Authority Could Need Its Reinsurance if Insured Losses Exceed Northridge Levels

The July 2000 study conducted by Tillinghast suggests that the authority is currently in a very strong position, with the capacity to sustain all but the most extreme earthquake events. To illustrate its financial strength, the authority calculated its potential losses from an earthquake with insured losses comparable to the Northridge earthquake. The Department of Insurance (department) estimates that the insured losses from the 1994 Northridge earthquake totaled $12.5 billion, including damage to commercial property as well as residential property and losses related to other lines of insurance, such as fire insurance. The department also estimates that the earthquake losses covered by residential policies were approximately $5.5 billion of the total. By applying its 1999 market share of approximately two-thirds to this figure, the authority estimated that its portion of the residential earthquake losses from the Northridge earthquake would have been $3.6 billion. However, the authority estimates that its losses would be considerably less than that if it was called on today to cover an earthquake of the same magnitude. One reason for this is that the overall coverage levels today are far less for a basic policy than for a pre-Northridge-era policy. In addition, the deductible for the basic authority policy is 15 percent compared to the 10 percent deductible prevalent in 1994. Further, the firm that developed the model used to predict the authority's potential losses estimates that based on the actual policy and coverage the authority offers today, its losses for a "year 2000 Northridge earthquake" would be $1.8 billion.

***Because of lower overall coverage levels and higher deductibles, the authority estimates that its losses for a current-day Northridge earthquake would be less than $2 billion.***

Recall from Figure 1 that the authority's financial structure requires it to access its funding sources in a specific order when called upon to pay claims by policyholders. When insured losses exceed $2.9 billion, the combined amount of the authority's capital base and first assessment layer, it can begin to draw on its reinsurance. Thus, an earthquake with insured losses comparable to the 1994 Northridge earthquake would not require the authority to use its financial resources from reinsurance. However, assuming that the authority maintains its current two-thirds market share, an earthquake or a series of earthquakes and related aftershocks with residential insured losses (after

deductibles) totaling $5 billion would require the authority to pay out approximately $3.3 billion. This level of loss would require the authority to use a portion of its first $1.4 billion in reinsurance to pay policyholder claims. According to Tillinghast, while more extreme earthquakes are certainly possible, they represent truly cataclysmic scenarios, which at some point fall beyond the range that can be fully covered by a privately funded financial security system. Between its inception in 1996 and December 31, 2000, the authority states that it paid its policyholders $244,674 in claims. Thus, as yet, the authority has not had to assess its member companies or use its reinsurance.

***Currently, the authority cannot tap into its reinsurance until its losses exceed $2.9 billion.***

## THE AUTHORITY HAS SUCCEEDED IN REDUCING ITS REINSURANCE PREMIUMS

As competition among reinsurers has increased since the Northridge earthquake, the authority has taken several steps to limit its reinsurance premiums. Specifically, in 1998, it added a "no-claims bonus" clause to its first reinsurance layer contract that allowed it to receive money back from the reinsurers if the authority made no claims against them within the designated three-year period (calendar years 1997, 1998, and 1999).

At the same time, the authority added a premium adjustment clause under which it would either receive a reimbursement or pay an additional premium if its exposure to loss fell below 90 percent or rose above 110 percent of $203.6 billion. For calendar years 2000 and 2001, the threshold amount is $178.8 billion. The contract limits the amount of the authority's reimbursement or surcharge under this provision to 10 percent of the total premium in the contract. According to the authority's lead reinsurance intermediary, this is an unusual benefit that most reinsurance contracts do not include. Specifically, this cap on the upward adjustment of the authority's premium limits the additional amount it can be charged. Even if consumer demand for earthquake insurance increases as a result of an earthquake and the authority sells more policies, the amount of its reinsurance premium will be capped, regardless of the increase in exposure to loss. For calendar years 1997 through 1999, the authority received $81.8 million in refunds for the no-claims bonus and in premium reimbursements. The following table shows the effect of the no-claims bonus and premium adjustment amendments on the authority's reinsurance rates for the past four years.

## TABLE

### Reinsurance Premium Reductions

| Year | Rate Before Premium Adjustment and No-Claims Bonus | Rate After Premium Adjustment and No-Claims Bonus |
|---|---|---|
| 1997 | 67%* | 60% |
| 1998 | 90 | 83 |
| 1999 | 65 | 58 |
| 2000 (est.) | 53 | 53† |

Source: California Earthquake Authority audited financial statements and accounting records.

* According to the authority's 1997 financial statements, reinsurance costs divided by the total premium from policies written during the year is 61 percent. The higher percentage here reflects a $35 million policyholder refund that reduced the total value of the policy premiums written.

† The no-claims bonus does not apply to calendar year 2000. In addition, as yet, the effect of the premium adjustment is not known.

In 1998, when the authority was fully operational, its rate, or the amount of premiums it used to buy reinsurance, was 83 percent, which is 7 percent lower than the rate reflected in its 1998 audited financial statements. In its 1999 audited financial statements, the authority reported most of the reimbursement it received under the no-claims bonus clause of its contract. This caused the rate for 1999 to be lower than it would otherwise have been. Therefore, the authority reallocated the refund among the years to which it was actually attributable to reflect the effect on the premiums in those years. By this time, most of the policies that were previously held by the 18 member companies had converted to authority policies, causing the authority's exposure to level off. As a result, after 1998, the reinsurance premiums and the authority's rate substantially decreased.

In October 2000, the governing board approved the authority's proposal to further reduce its reinsurance premiums by electing an option within its second reinsurance layer contract that reduces the amount of reinsurance coverage it purchases. Tillinghast suggested in its July 2000 report that the authority consider eliminating or reducing the amount of reinsurance coverage in its second reinsurance layer unless it could negotiate better prices and contract terms. The authority's actuaries studied the effect such a move would have on its ability to continue to operate and concluded that reducing the amount of coverage

*Because the likelihood of the authority using its second layer of reinsurance is low, the governing board voted to reduce it by half, beginning in April 2001.*

by half would not significantly change the authority's ability to operate until 2013. As a result, the governing board elected an option within the contract for the second reinsurance layer that reduces the amount of reinsurance purchased for the period of April 1, 2001, to March 31, 2002, to 50 percent of the contract amount, which resulted in a reinsurance premium for 2001 of $35.6 million rather than the original $64.5 million.

Also in October 2000, the authority's governing board approved a contract for reinsurance under which the reinsurer agreed to provide $100 million of coverage. Under this new contract, the reinsurance company will attempt to transfer its risk of losing that amount to the capital market by selling securities linked to earthquake insurance to selected institutional investors, who risk losing their investment if insurance industry-wide losses exceed a specified amount. By allowing the reinsurance company to test its ability to transfer a portion of its risk, and possibly a larger portion in the future, to the capital market, the authority is attempting to diversify its sources of capital, which should eventually allow it to lessen its reliance on reinsurance. Under this arrangement, the authority's ROL is 5.99 percent, significantly lower than the 8.5 percent ROL it currently has for the same portion of the first reinsurance layer.

## THE LAW DOES NOT PROVIDE SPECIFIC BENCHMARKS FOR MONITORING REINSURANCE COSTS

The law requires the authority to monitor its reinsurance costs; however, it provides only general guidance rather than specific benchmarks against which the authority can measure these costs. Specifically, Section 10089.10 of the code requires the authority to purchase reinsurance at rates and on terms that are "reasonable and appropriate," but it does not define those terms. Two ratios, the ROL and the rate, provide different perspectives on reinsurance costs. The authority uses both ratios to analyze and monitor its reinsurance costs. Although it can use measures such as the ROL and rate to benchmark its own performance and compare trends over years, as yet it has not done so because wide fluctuations in costs over its first four years have made the historical data difficult to compare.

The code also requires that the total annual expenditure for reinsurance contracts not exceed a reasonable and appropriate rate. (Recall that the rate is the annual ratio of reinsurance premiums paid to earthquake insurance premiums collected,

expressed as a percentage.) Again, because the code does not define what constitutes a reasonable and appropriate rate, it leaves this determination to the authority's governing board. As we discussed in the previous section, the rate in 1998 that was initially a cause for concern was primarily due to one-time factors at the commencement of the authority's operations, and it is making a reasonable effort to control the amount it pays for reinsurance.

***The authority's governing board is responsible for determining whether the amount the authority spends for reinsurance is appropriate.***

Because the authority's business and financing structure differs significantly from that of insurance companies, it is not reasonable to compare the authority's rate or ROL to those of insurance companies that sell catastrophe insurance. Nevertheless, according to its lead reinsurance intermediary, the authority's ROL under its current contract for the first reinsurance layer is not out of line with what other companies that buy large amounts of catastrophe reinsurance are paying in the current market. Moreover, over the authority's first four years of existence, its rate and ROL for its first reinsurance layer have fluctuated significantly. For example, the authority's average ROL was 8.4 percent in calendar year 2000, compared to a 14.4 percent average for calendar years 1997 and 1998.

## THE AUTHORITY FACES CRITICAL CHALLENGES IN THE FUTURE

Although the steps it has taken thus far have resulted in lower reinsurance costs, future market conditions could make it difficult for the authority to purchase reinsurance or to obtain such favorable prices when its current contracts expire. The contracts for the first and second reinsurance layers will expire December 31, 2001, and March 31, 2002, respectively. Because the authority must maintain a financial structure that is sufficient to pay its policyholders' claims in the event of an earthquake, it will need to buy reinsurance at the best possible price and terms, given the market that exists at that time. If a severe earthquake occurs in California that causes reinsurers to incur losses before these contracts expire, reinsurance companies may be unwilling or unable to provide the reinsurance coverage the authority will need upon renewal.

Further, because its reinsurers provide reinsurance globally, catastrophic events in other parts of the world may place a strain on the reinsurers' financial resources, causing them to increase reinsurance prices for the authority. To address this

concern, its lead reinsurance intermediary has established formal guidelines for selecting reinsurance providers. These guidelines are designed to ensure that reinsurers are able to fulfill their claims-paying obligations without financial difficulty in the event that the authority should need them to pay out on policyholder claims. The authority adopted these guidelines and used them when extending its reinsurance contracts in 1999, and it expects to continue using them in the future. Nevertheless, it will need to closely monitor all factors that affect the price and availability of reinsurance.

Another challenge the authority faces is that its ability to require its member companies to pay the first assessment expires in December 2008. As Figure 1 showed earlier, this assessment layer covers losses that exceed the authority's available capital, and it must be used before the authority can tap into the first reinsurance layer to pay losses. The authority's underlying statute establishes its ability to assess its member companies up to $2.2 billion if needed to cover losses. However, this resource will not be available after 2008 because Section 10089.23(c) of the code limits the period during which the authority can impose this assessment to the first 12 years of its operation, which began in December 1996. According to Tillinghast, when the first assessment layer expires, the authority's claims-paying capacity will decrease until it can augment its existing capital to offset the decrease. Further, when this layer is no longer available, the buffer between the authority's capital and the first reinsurance layer will cease to exist. The loss of this buffer will greatly increase the probability that the first reinsurance layer would have to be used to pay policyholder claims in the event of an earthquake. Consequently, the authority will find it more challenging to negotiate favorable terms for its first reinsurance layer unless it builds a larger capital base before that time. The authority's recent decision to reduce the amount of coverage it buys for its second layer of reinsurance should allow it to devote more of its resources to building its capital base.

***Reinsurers may not be willing to provide reinsurance coverage after 2008 when the probability greatly increases that reinsurance would have to be used in the event of an earthquake.***

## CONCLUSION

The authority's ability to pay claims was intended to depend heavily on outside funding sources, such as reinsurance. Although its high rate in 1998 was an initial cause for concern, this rate was due primarily to a reluctant reinsurance market and to premiums being spread unevenly over the authority's two-year contract for its first layer of reinsurance. The payment of two

years of coverage in 1998 under the contract for the authority's second layer of reinsurance also contributed to the high rate. Although reinsurance prices are high, the authority has made efforts to obtain as favorable a price for reinsurance as possible and to reduce its reliance on reinsurance by beginning to test the capital market.

## RECOMMENDATION

To ensure that it maintains its claims-paying capacity, the authority should continue to monitor the reinsurance market and research alternative financing methods to reduce its dependence on reinsurance. ■

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# CHAPTER 2

## *Although It Is Too Early to Assess the SAFER Program's Effectiveness in Achieving Retrofits, the Authority Is Reducing the Backlog of Seismic Assessments for Homeowners*

### CHAPTER SUMMARY

As a result of the limited success of the first phase of the pilot earthquake mitigation program of the California Earthquake Authority (authority), the authority made several changes based on the response it received from consumers. However, because the authority has not found the right mix of incentives to persuade homeowners to make the needed improvements, available data shows that the second phase, the State Assistance for Earthquake Retrofitting (SAFER) program, at this point, has been equally ineffective in getting homeowners to retrofit their homes. Despite the fact that the SAFER program initially received a strong response from homeowners, the authority's data shows that only a small percentage of those homeowners who received assessment reports have completed the necessary seismic retrofit improvements. In January 2001, the authority conducted a telephone survey of homeowners who received seismic assessment reports through the SAFER program. Without further analysis of the results, it will not be able to determine the number of homeowners who have made the necessary improvements outside the SAFER program but did not report them to the authority. However, the small number of those the authority does know about indicates that the program has not been successful as yet in getting homeowners to retrofit their homes.

The SAFER program, which the authority believes it must offer to all owners of eligible homes to maintain its current federal tax status, is intended to reduce potential personal and business economic losses in the State that can result from earthquakes. Under the SAFER program, the authority uses some of the interest earned on premiums from its policyholders to provide homeowners free seismic assessments of their homes.

As of early December 2000, the authority had spent $3.5 million to sort through 16,946 telephone calls from consumers and provide professionally prepared seismic assessments to 4,772 of the 8,304 homeowners who qualified for the program. Of 3,576 homeowners whose assessment reports indicated that structural retrofit improvements were needed, 31, or 0.9 percent, have made all of the recommended improvements. Another 54 homeowners have begun the process by ordering professionally prepared plans of the retrofits needed.

Other homeowners who received seismic assessments may have made the necessary improvements outside the SAFER program without notifying the authority. Of course, many homeowners have had their assessment reports for only a few months and may need more time to plan for improvements that can be complex and expensive. As yet, however, the goal of reducing the State's risk of loss to citizens and businesses has not been achieved.

When it was introduced to consumers in late September 1999, the SAFER program received a great deal of media attention, and the response from homeowners interested in receiving a seismic assessment of their homes was overwhelming. As of early December 2000, approximately 68 percent of the home inspections had been completed, and 86 percent of these homeowners had received their assessment reports. According to the authority, the remaining inspections and assessment reports should be complete and mailed to homeowners by mid-May 2001. Meanwhile, the authority is discussing the need to change its approach for the next phase of its mitigation program by determining what additional changes it should make to encourage more homeowners to retrofit their homes.

## THE AUTHORITY HAS NOT YET CAPTURED SUFFICIENT DATA TO ASSESS THE SAFER PROGRAM'S EFFECTIVENESS IN ACHIEVING RETROFITS

***Unless more homeowners retrofit their homes, the goal of reducing potential earthquake losses in the State will not be realized.***

Despite improvements to the earthquake mitigation program and the large residential populations in the counties in which the program's second phase was offered, the number of homeowners who have retrofitted their homes is low. As discussed in the Introduction, the goal of the SAFER program is to reduce the risk of personal and business economic losses in the State due to earthquakes by making homes more seismically secure, and this goal is not met until the recommended improvements

are completed. Making complex retrofit improvements can be expensive, so homeowners whose assessment reports identified structural problems, such as homes that were not bolted to their foundations, may need more time to plan for the improvements. The authority is planning to obtain data to determine how many homeowners have completed retrofit improvements and attempting to determine how it can persuade more homeowners to make retrofit improvements to their homes.

### Changes to the Mitigation Program Were Reasonable, But As Yet Ineffective

*More than 80 percent of the homeowners who participated in the first phase did not see the value of retrofitting their homes.*

In June 1998, the authority implemented the first phase of its pilot earthquake mitigation program, called the Residential Retrofit Program, in Santa Clara and Ventura counties. To conduct inspections and prepare assessment reports, the authority contracted, through a competitive bid process, with QuakeSAFE. In this phase of the program, homeowners paid for their seismic assessment reports and were reimbursed for the cost of the report after they had completed all of the retrofit work or if the report indicated that no additional work was required. In addition, the pilot program offered homeowners low-interest loans to help pay for retrofit improvements. Over a period of 9 months, the authority received 546 inquiries from consumers, of which 106 requested and received seismic assessment reports. As of April 1999-10 months after the program began-5 of these homeowners had received assessment reports that indicated that no seismic work was needed, and only 10, or 10 percent, of those remaining had made the necessary improvements. By October 2000 only two additional homeowners had retrofitted their homes. Thus, 88 percent of the homeowners whose homes needed seismic improvements did not believe the value they would receive by investing in retrofitting their homes was worth continuing the program. Because the authority was disappointed with these results, it conducted focus group research with consumers in Santa Clara and Ventura counties to determine what would motivate homeowners to retrofit, and why homeowners who had received an assessment report did not make the recommended improvements.

Based on the feedback it received, the authority changed the name of the second phase of its pilot program to SAFER and made the program more attractive by offering free retrofit inspections. The SAFER program offered an improved written assessment of the inspection results and allowed a homeowner to discuss the assessment with the engineer who prepared it. In

late September 1999, the authority began offering residential earthquake inspections under its SAFER program in eight Bay Area counties: San Francisco, San Mateo, Marin, Napa, Sonoma, Alameda, Contra Costa, and Santa Clara.

Partly as a result of the changes it made, the authority received 8,304 responses from homeowners whose homes were eligible for the SAFER program, requesting a free seismic assessment. However, the strong interest in the SAFER program does not appear to have led to a large number of completed retrofit improvements. Although it had completed 4,772 assessments as of December 8, 2000, the authority could identify only 31, or 0.9 percent, of the 3,576 homeowners whose homes needed structural retrofit improvements had completed them. Another 54, or 1.5 percent, had begun the process of retrofitting their homes by requesting copies of professionally prepared plans to address the needed seismic improvements. Moreover, although the SAFER program continued the practice of offering low-interest loans to help pay for retrofit improvements, as of November 2000 only one homeowner had applied for such a loan.

***The authority does not know how many SAFER program participants have followed through with needed retrofit improvements.***

The program provides homeowners with a list of participating contractors who are specially trained in seismic retrofit improvements, and these contractors notify the SAFER program after they have made the improvements. However, homeowners are free to choose other contractors to handle retrofit improvements, and when they do, the authority may not know that the work has been done. The authority believes that other homeowners whose assessments indicated that relatively inexpensive water heater bracing was needed, may have completed the bracing without reporting to the authority. We agree that this assumption is reasonable. According to QuakeSAFE, 1,049 homes required only bracing for the water heater. Even assuming that all of these homeowners added the necessary bracing-an improvement that is inexpensive and does not require a professional contractor-the number of homes with completed retrofit improvements would represent only 23 percent of the total number of homes the assessments found to need earthquake retrofits.

Our discussion above was based on the results of the SAFER program at the time of our fieldwork. More recently, the authority hired a research firm to survey a sample of the then-current total of 4,830 homeowners who have received seismic assessment reports. The research firm surveyed 300 of these homeowners and provided its analysis of the survey results in January 2001. The survey is a good first step in determining the number of

homeowners who have completed the retrofit improvements identified in their assessment reports. In addition, the survey should help the authority determine what incentives would persuade more homeowners to complete the necessary improvements. However, the results of the survey will require additional analysis to be useful to the authority.

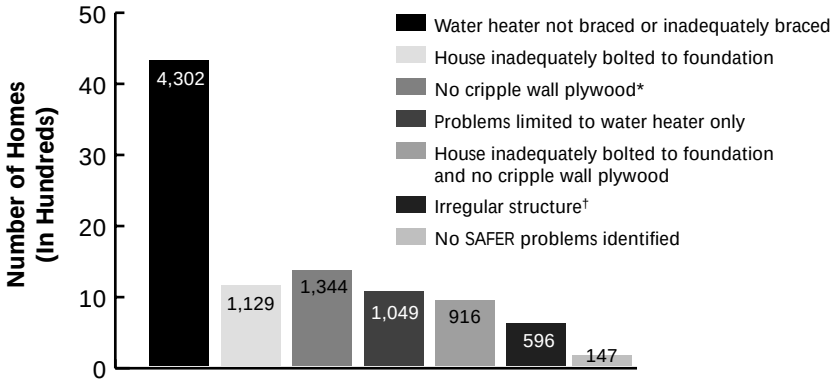
For example, the survey results indicate that 85 of 141 homeowners who responded that they have taken steps to improve the seismic safety of their homes have bolted their homes to their foundations and 68 of the 141 have added plywood to their cripple walls (the short wall between the cement foundation and the bottom floor of the house). Because the survey analysis does not indicate whether any of the 31 homeowners we previously identified as having completed retrofit improvements were included in this survey, we were unable to adjust the total number of known completions. In addition, we could not determine whether the improvements reported in the survey results were all that were necessary or whether the homes required additional seismic improvements. Further, we could not determine if the 69 homeowners who responded that they have completed all of the recommended retrofit improvements were those whose assessment reports indicated that structural improvements were needed as opposed to those who needed only to do the simpler, less expensive water heater bracing.

Because the goal of the mitigation program is to encourage homeowners to retrofit their homes in order to reduce potential losses from earthquakes, the authority must find the appropriate blend of incentives to persuade homeowners to undertake the retrofit. By providing seismic assessments, the authority has increased awareness among homeowners whose assessments identified problems that historically result in costly structural damage in an earthquake. However, devising incentives to encourage more of these homeowners to make the necessary improvements will be more challenging. According to the authority, the cost of retrofitting a single-story home that needs more than just bracing for the water heater ranges from $2,000 to $12,000. Figure 2 shows that most of the homes inspected have water heater problems, but many also require more complex seismic retrofit improvements. For example, using the number of assessment reports completed as of December 8, 2000, 1,129 of the 4,625 homes that needed seismic improvements were not adequately bolted to their foundations.

***Since many homes require complex and expensive retrofit improvements, the authority must devise more incentives to encourage homeowners to make the necessary improvements.***

## FIGURE 2

**Types of Problems Identified in 4,772 Assessments Completed Under the SAFER Program**




Source: QuakeSAFE

* Cripple walls are the portion of short wall between the cement foundation and the bottom floor in the crawl space of a house.

† Includes complex single-family homes that will require additional engineering calculations to be useful for the homeowner. Usually these structures are on a hillside.

### The Authority Is Not Yet Sure How It Will Further Persuade Homeowners

According to the authority, it is discussing a strategy for the third phase of its mitigation program and is attempting to determine how it could encourage more homeowners to make retrofit improvements once they have received their assessment reports. To determine the optimal strategy for the third phase, the authority plans to review information from its previous focus group research and develop information from its recent telephone survey of SAFER participants. In addition, the authority plans to filter the SAFER program database in order to group homeowners and analyze their needs. For example, by identifying homeowners whose homes are located within a specified geographic area, are structurally similar, and have similar retrofit needs, the authority can tailor its approach to meet the specific needs of that group of homeowners.

Part of the strategy for the authority's mitigation program involves expanding the SAFER program to offer it statewide. Expanding the program will likely require additional resources, and because the authority's enabling statute limits the amount

of funding it can spend for its SAFER program and limits its staff to a total of 25, a change in statute may be necessary. The statute is unclear as to whether the employees who work directly on the SAFER program are included in the authority's 25-employee limit.

Currently, the authority is researching the possibility of entering into a joint powers agreement with the Federal Emergency Management Agency, as well as with other federal agencies, to provide funding for the SAFER program. Under such agreements, the SAFER program would be able to accept funding from other government sources in addition to the invested premiums from the authority. This funding would allow the authority to accelerate the expansion of its mitigation program statewide.

For now, the authority is attempting to work within its limited resources to find the right balance of incentives, including rebates and loan discounts, and it has looked at other mitigation programs both within California and nationwide. For example, it has studied the experience of the Department of Insurance, which offers grants and loans to low- to moderate-income households to assist them in retrofitting their homes. The grant program, which generally provides up to $8,000 to cover retrofit improvements, has resulted in more retrofitted homes than the loan program, which has shown results similar to those of the SAFER loan program.

***Only 20 percent of the authority's policyholders who are eligible have pursued the 5 percent premium discount for retrofitting.***

Although not directly tied to its SAFER program, the authority encourages homeowners to retrofit their homes by offering a discount on its policy premiums. Specifically, the authority's enabling statute requires it to offer a 5 percent discount on policy premiums for residences that were built before 1979, when building codes changed, and that have passed a seismic inspection. According to the authority, as of December 2000, 253,753, or 35 percent, of its policies were for homes built before 1979, which makes these homeowners eligible for the 5 percent discount once their homes have passed a seismic inspection. Of these, 51,548, or 20 percent, had received the discount. According to the authority, homeowners whose homes were built in 1979 or later already receive rates on their earthquake policies that are approximately 20 percent lower than the rates for older homes.

## THE AUTHORITY HAS REDUCED THE BACKLOG OF SEISMIC ASSESSMENTS FOR HOMEOWNERS

The authority originally estimated that, because of the poor response to the first phase of the mitigation program, it would receive fewer than 1,000 responses to the SAFER program. To its surprise, however, it received nearly 17,000 phone calls in two months. Even if the authority had quadrupled its estimate to account for the fact that the new pilot area consisted of eight counties rather than two, it would have fallen far short of the actual number of responses it received. This unexpected demand created a backlog of seismic assessments, which the authority has taken steps to reduce. As of early December 2000, it had completed 68 percent of the inspections and had mailed assessments for 86 percent of these. The authority expects to eliminate the backlog by mid-May 2001.

### An Overwhelming Response to the SAFER Program Resulted in a Backlog of Homeowners' Requests for Seismic Assessments

According to the authority, its contacts with the media warned that its press release announcing the start of the SAFER program would receive very limited media attention because other, more interesting events in the Bay Area were in the news, such as the San Francisco Giants' last game at Candlestick Park. However, public sensitivity to earthquakes increased because the same day that the authority announced its SAFER program, a 7.4 magnitude earthquake occurred in Mexico and a seismic study of the fault lines in Oakland was released. As a result, the media extensively covered the launch of the SAFER program, resulting in an extremely high level of consumer response. In one 24-hour period alone, the program received 3,278 phone calls, and in two months, the program received 16,946 phone calls. After it had sorted through the responses, the authority determined that 8,304 qualified homeowners were interested in receiving seismic assessment reports. In December 1999, the authority closed the SAFER program to new participants until it could serve those already on its list.

***A unique series of events initially increased homeowners' interest in having their homes assessed for earthquake readiness.***

### The Authority Used a Reasonable Process to Increase the Number of Engineers Working Under the SAFER Program

Because of the high level of interest in the SAFER program, the authority amended its contract with QuakeSAFE to allow the engineering firm to enter into subcontracts with other engineering

***By increasing the number of engineering firms that conduct seismic assessments, the authority will eliminate its backlog six months earlier than it otherwise would have.***

companies. We estimated that with just one engineering firm under contract, the SAFER program would have completed only 60 assessments per week and thus would have taken more than two and a half years to complete all of the assessments. The additional engineering firms will allow it to complete all of the assessment reports in less than two years. According to the authority, because it did not expect such a high level of interest in the SAFER program, it needed to act quickly to identify other engineering firms and had insufficient time to go through a competitive bid process. Although the subcontractor agreement is between the other engineering firms and QuakeSAFE, the authority provided guidelines for contracting and monitored the progress of the contracts.

In addition to the usual selection criteria, such as a license in good standing and sufficient liability insurance, QuakeSAFE narrowed the field by targeting companies having a high level of competence in engineering design software. QuakeSAFE has developed specialized software and information-gathering systems that support the detailed format of the assessment report. Because it is important to maintain consistency in the information included in the assessment reports prepared for the SAFER program, QuakeSAFE needed to find firms with access to sophisticated and up-to-date computer equipment. Additionally, QuakeSAFE wanted engineering firms that were located in the regions in which they would work, to ensure the efficiency of the process by minimizing travel time. Finally, QuakeSAFE sought companies that were willing to perform residential assessments, an area in which professional engineers are typically not involved because most homeowners are not willing to pay the high cost of their services.

According to the authority, QuakeSAFE ultimately coordinated with an engineering firm that is well known in the Bay Area for its technical expertise in engineering design software to select two other firms that have offered their employees extensive training in engineering software. These three additional engineering firms completed a two-week training period, and by the end of March 2000, two of the firms were providing services under the SAFER program. Because QuakeSAFE needed to work more closely with the third firm for the first few months, it did not begin providing services until June.

The authority may have been able to eliminate its backlog more quickly if it had contracted with more engineering firms. However, according to the authority, it did not do so because only three

companies met QuakeSAFE's requirements. Moreover, unless QuakeSAFE could assure the companies interested in participating in the SAFER program that their workloads would be steady, those companies may not have found it cost-effective to devote some of their professional engineering staff to activities outside of their normal business.

***Because more firms are involved in phase two of the mitigation program, when the authority is ready to expand the program statewide it will be able to draw from a larger group of experienced engineering firms.***

Residential earthquake retrofitting is a new area for the three subcontracted engineering firms that are currently participating in the SAFER program effort. Being involved in the SAFER program gives them an opportunity to build a knowledge base for possible future mitigation projects within California or in other parts of the country. In addition, it allows these companies to diversify their operations within their industry. Moreover, when the authority is ready to expand the SAFER program statewide, it will be able to draw from a larger group of trained and experienced engineering firms. To date, these engineering firms have used a large portion of their staff resources on the SAFER program. For example, according to CAD Masters, one of the engineering firms subcontracted by QuakeSAFE, it currently dedicates 55 percent of its staff to projects for the SAFER program. Additionally, CAD Masters estimates that it derived 30 percent of its gross income from sales during the six-month period of May 1, 2000, to October 31, 2000, from the SAFER program. However, once the authority eliminates the backlog of assessments, it will no longer have work available for the three subcontracted firms, and they will have to fill the gap with other business until the authority decides on the direction the next phase of the earthquake mitigation program should take. As its lead engineering contractor, QuakeSAFE will assist the authority in developing the direction the program will take in its third phase.

Although the authority did not require QuakeSAFE to use a competitive bid process to select the subcontractors, it appears that QuakeSAFE used an appropriate method to identify companies that meet the needs of the SAFER program. Moreover, by allowing QuakeSAFE to share its workload with other qualified firms located in the counties they serve, the authority will be able to eliminate its backlog more quickly than it otherwise would. As of early December 2000, the SAFER program had completed 5,603, or 68 percent, of the inspections and had mailed assessments for 4,775, or 86 percent, of these.

The authority and QuakeSAFE expect to complete the remaining inspections and assessments at a rate of 150 per week. This should allow the authority to eliminate the backlog by mid-May 2001. We believe their expectation is reasonable; however, unusual weather conditions, such as an extremely high level of rainfall, may cause QuakeSAFE to postpone some inspections.

### The Authority Has Ensured That the SAFER Program Will Have Sufficient Available Funding to Eliminate Its Backlog of Seismic Assessments

In May 2000, the authority projected that its backlog of seismic assessments would soon exceed the funding available for its SAFER program. To eliminate the possibility that cash-flow problems would hamper its progress toward reducing the backlog, the authority asked its board to make an advance payment to the SAFER program. As of early December 2000, the authority had spent $3.5 million for its earthquake mitigation pilot program. As stated in the Introduction, the authority is required to annually set aside the lesser of $5 million or 5 percent of its interest income from invested premiums for the SAFER program if its actuaries determine that the payment will not impair the financial integrity of the authority. Since the start of the earthquake mitigation program, the lesser of the two options has been 5 percent of interest income. Using this formula, the authority transferred $1.2 million to the SAFER program in December 1999. This amount was based on 5 percent of the interest income earned over the 12-month period between October 1998 and September 1999. However, in May 2000, the authority informed its board that unless it received additional funding, the program would have to be temporarily shut down. As a result, with the approval of its board, the authority made an interim payment of $1.6 million in August 2000, which allowed the SAFER program to continue until the end of the calendar year. The authority plans to make the remaining portion of the estimated total annual payment, $1.4 million, available in February 2001, bringing the total annual contribution for calendar year 2000 to $3 million, which again represents 5 percent of its interest income. This payment will provide the SAFER program sufficient funding to completely eliminate its backlog of inspections and assessments by its target date. According to the authority, it plans to ask its board for another advance payment in June 2001, so it can begin work on the next phase of its mitigation program, during which it hopes to increase the number of homeowners who retrofit their homes.

***As of December 2000, the authority has spent more than $3 million to provide free seismic assessment reports to homeowners.***

## CONCLUSION

Since the launch of the authority's earthquake mitigation program, only a small percentage of homeowners appear to have made seismic improvements to their homes. The changes in the SAFER program to make it more attractive to homeowners, combined with the extensive media coverage the program received, produced a strong response from homeowners that resulted in a backlog of seismic assessments. The authority has reduced the backlog, thereby increasing awareness by those homeowners of structural problems in their homes. However, the authority has not yet found the right mix of incentives to encourage homeowners to retrofit their homes. Because the measure of success of the SAFER program is not the number of assessments completed but the number of houses made more seismically secure, as yet the SAFER program does not appear to be successful.

## RECOMMENDATIONS

- To ensure that the goal of the mitigation program is achieved, the authority should establish a system for determining how many homeowners who participate in the SAFER program complete the recommended retrofit improvements. The authority should also establish a target number of homes to be made seismically secure. This number would become the measure by which the authority can demonstrate that the goal of the program has been achieved. Until these elements are in place, the authority should delay expanding the program.

- To further encourage homeowners to protect their homes from the peril of earthquakes, the authority should continue to research why more homeowners who received assessment reports have not followed through with retrofitting their homes. Once it has identified these reasons, the authority should make appropriate changes to the SAFER program before expanding it.

- The authority should continue to use the information gathered in the SAFER database to develop a strategy to increase the number of retrofits performed as a result of the SAFER program.

- The authority should pursue clarification of its enabling statute to determine whether its limit of 25 staff includes those who work solely on the earthquake mitigation program or whether the program's staff are in addition to the 25 staff the authority is allowed.

We conducted this review under the authority vested in the California State Auditor by Section 8543 et seq. of the California Government Code and according to generally accepted government auditing standards. We limited our review to those areas specified in the audit scope section of this report.

Respectfully submitted,

ELAINE M. HOWLE
State Auditor

Date: February 28, 2001

Staff: Nancy C. Woodward, CPA, Audit Principal
Debra L. Maus, CPA
Dawn M. Beyer
Mandi Steele

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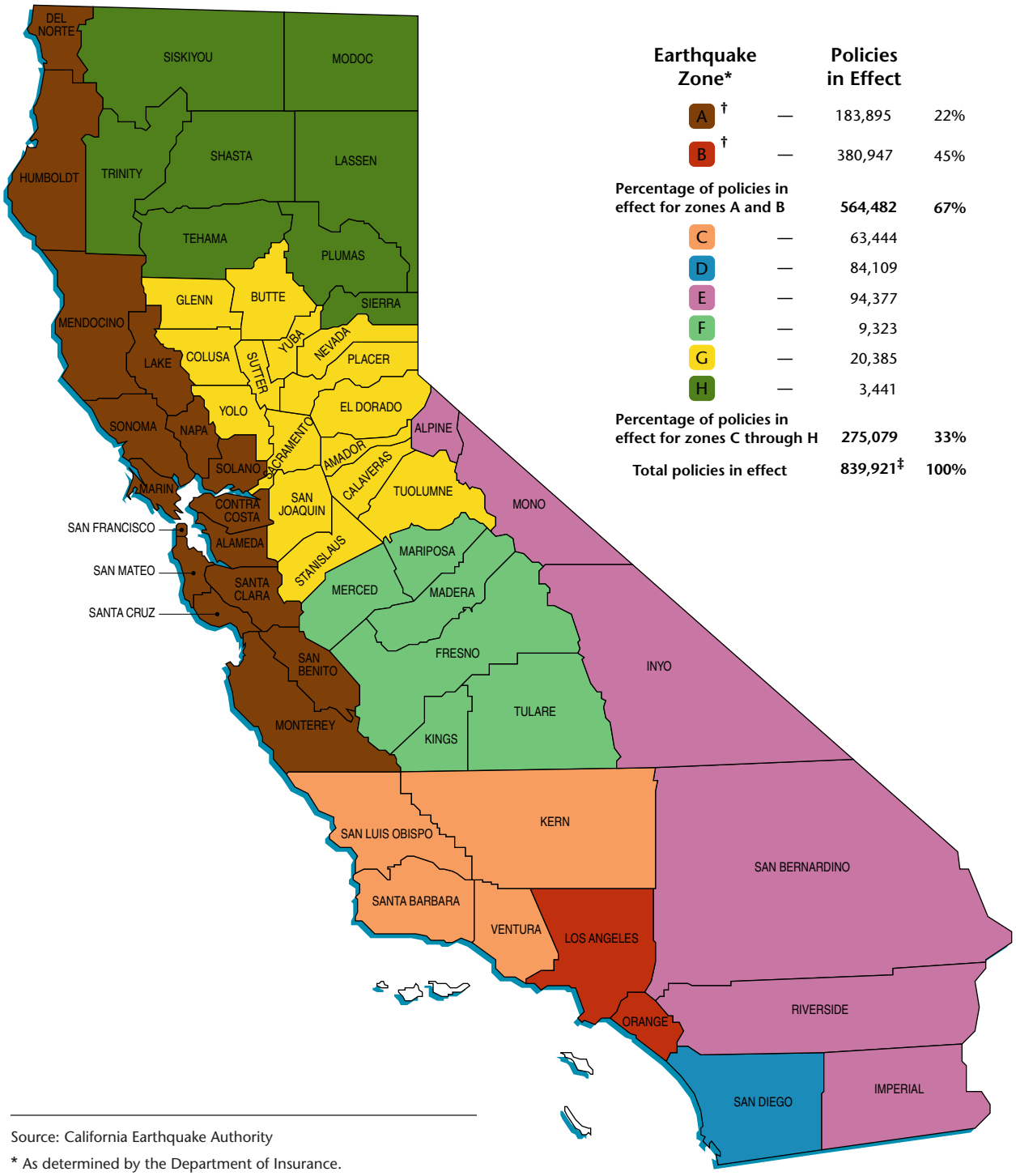
# APPENDIX

## *Geographic Distribution of the Authority's Policies*




| Earthquake Zone* | | Policies in Effect | |
|---|---|---|---|
| A † | — | 183,895 | 22% |
| B † | — | 380,947 | 45% |
| **Percentage of policies in effect for zones A and B** | | **564,482** | **67%** |
| C | — | 63,444 | |
| D | — | 84,109 | |
| E | — | 94,377 | |
| F | — | 9,323 | |
| G | — | 20,385 | |
| H | — | 3,441 | |
| **Percentage of policies in effect for zones C through H** | | **275,079** | **33%** |
| **Total policies in effect** | | **839,921‡** | **100%** |

Source: California Earthquake Authority

* As determined by the Department of Insurance.

† The Department of Insurance has determined that there is a greater potential for loss of life and damage to buildings and homes in counties located within the boundaries of zones A and B due to the high concentration of population and property.

‡ As of October 12, 2000.

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*Agency's comments provided as text only.*

California Earthquake Authority
David Knowles
Chief Executive Officer
300 Capitol Mall, Suite 1230
Sacramento, California 95814

February 9, 2001

Elaine M. Howle*
California State Auditor
555 Capitol Mall, Suite 300
Sacramento, CA 95814

RE: Response to the State Auditor Report on the California Earthquake Authority

Dear Ms. Howle:

Overall, it is the opinion of Authority ("CEA") staff that the State Auditor conducted a rigorous analysis and provided helpful commentary and recommendations for meaningful improvements in the business affairs of the CEA. The CEA appreciates the thoroughness of the audit and agrees with each of the specific recommendations made in this report. We will use the recommendations to improve the CEA's ability to fulfill its public service mission.

We offer the following clarifications and commentary, however, that we believe will provide a more complete understanding of the programs discussed in this audit report:

CEA's Reinsurance Program

- The "high cost" of reinsurance

The report contained the statements, "...the premiums reflected in the Authority's reinsurance contracts are high," and "[t]he Authority's capacity to pay claims relies heavily on costly reinsurance." It is important to bear in mind the entire context of these remarks to ensure accuracy in their use.

We agree with the factors that the Auditor has enumerated in pointing to the CEA's "high" reinsurance costs, including references to the comparatively higher cost of catastrophe reinsurance, the mandate to offer insurance to all qualified California homeowners, and the unique statutory restrictions on the Authority. In that regard, we would echo the words of the Auditor, "The Authority's unique nature contributes to high reinsurance costs."

*California State Auditor's comments begin on page 45.

But the CEA has not simply acquiesced and accepted high reinsurance costs as an unchangeable reality. The Auditor found that, "The Authority has succeeded in reducing its reinsurance premiums," and documented a 41.8% reduction in the Rate on Line for the CEA's first layer of reinsurance in its first four years of operation. We agree that "[t]he Authority's reinsurance costs are high but not unreasonable, and the Authority has succeeded in reducing those costs while maintaining a level of coverage it believes is prudent."

- Challenges faced by the CEA

The Auditor correctly indicated that the CEA faces upcoming challenges in maintaining adequate claims-paying capacity due both to expiration of existing reinsurance contracts in coming years, and the elimination of the first industry assessment layer of $2.2 billion in 2008. These are substantial concerns, and the CEA Governing Board has already initiated a process to retain experts to advise the CEA in 2001 concerning these and other matters that involve potential restructuring of the CEA's finances and governance.

- The strength of CEA's risk transfer program

Since its inception, and as envisioned in the future, the CEA has made and will continue to make use of carefully-crafted guidelines for the selection of reinsurers chosen to accept a portion of the risk of loss to CEA policyholders in return for premiums paid. As found in the audit, "These guidelines are designed to ensure that reinsurers are able to fulfill their claims-paying obligations without financial difficulty in the event that the Authority should need them to pay out on policyholder claims." CEA staff members working in close collaboration with reinsurance professionals developed these guidelines to serve as an important tool to further ensure that the strength of the promises made to CEA policyholders are of the best quality possible.

The CEA came into existence in 1996 amid much skepticism as to its ability to meet the challenge of effectively protecting Californians against the risk of loss through earthquakes. With the steady progress as documented in this audit report and as recommended therein for future implementation in the key area of the CEA's risk transfer program, I am confident of the CEA's ability to meet all of its commitments as was originally intended.

CEA Mitigation Program

We appreciate the Auditors' recognition that we managed the unprecedented and unexpected volume of calls from homeowners reasonably. The 17,000 contacts we received in two short months significantly taxed our staff resources and funding. Nonetheless, we will have eliminated the backlog in the program by mid-May 2001, and provided earthquake assessments to more than 8,300 households free of charge. Moreover, we have begun to implement each of the report's recommendations. They will assist us as we gather data and refine the program for possible expansion.

The CEA believes that the initial random SAFER follow-up survey (conducted in January 2001) of 300 program participants indicates that the current program holds significant promise for success. The survey reveals that 47 percent of the program participants - or as many as 2,270 if extrapolated to the population of the 4,830 homeowners who had received their earthquake assessments at that time - made at least one of the important seismic retrofits identified in the inspection. It also suggests that, of those 2,270 who we believe made at least one improvement, 49 percent of the program participants (or a projected 1,112 participants) made all of the recommended seismic improvements. In any event, each of these corrective measures will save lives and reduce damage in the event of an earthquake. Finally, of those participants who had not taken the opportunity to retrofit, 72 percent indicated that they plan on doing so in the future and 52 percent plan on retrofitting their home within the next year. (1)

While we agree that it is too early to determine the full level of success of the SAFER program, we think that these tentative results are very encouraging. When the CEA was developing the program elements of the current SAFER program, CEA staff had extensive conversions with the Federal Emergency Management Agency and other disaster response agencies. During those discussions, it became apparent that motivating significant numbers of homeowners to take steps to protect themselves against catastrophes such as earthquakes, hurricanes and forest fires, would be very challenging: programs elsewhere had met with limited success, at best, despite significant investment of time and resources. Those that had been considered successful counted their successes in the hundreds. By contrast, the SAFER program appears to have begun motivating thousands of homeowners to retrofit.

We believe that this program is an emerging *success*. Moreover, it should be pointed out that the CEA has always intended to examine all aspects of this pilot program once the current inspections are completed. These will include appropriate incentives, costs, response targets, etc. Our initial survey also provided extensive information regarding reasons for not yet retrofitting and incentives that would motivate participants to retrofit. As we identify hurdles and impediments to retrofitting, the CEA fully expects it will be able to help large numbers of Californians improve their seismic safety. We are mindful, however, that homeowners ultimately will make the final decision about how best to balance their family budgets against retrofit costs in this voluntary program.

Finally, the SAFER program was designed to meet several program goals along the way toward reaching its long-term goal of making Californians safer from earthquakes through retrofitting of their homes. They are:

1. Reaching a large number of homeowners with a limited amount of funding.
2. Making homeowners aware of the specific steps required to retrofit their homes.
3. Encouraging the homeowner to complete the recommendations made in the inspection.

The SAFER pilot program has accomplished the first goal by receiving approximately 17,000 (2) phone calls in one short time period resulting in over 8,300 valuable home inspections. With less than 2,000 inspections left to complete, the second goal will be completed in May of this year. (3) Regarding program goal #3, an unprecedented number of homeowners have already taken one or more steps to retrofit their homes, and results of our initial survey will be of value as we determine the best ways to encourage more homeowners to retrofit.

We strongly believe that as this program evolves it will have a great opportunity for success.

Thank you for the opportunity to offer these responses and clarifications to the audit performed by your office on the California Earthquake Authority.

Sincerely,

*(Signed by: David Knowles)*

David Knowles
Chief Executive Officer

# COMMENTS

## *California State Auditor's Comments on the Response From the California Earthquake Authority*

To provide clarity and perspective, we are commenting on the California Earthquake Authority's (authority) response to our audit report. The number corresponds to the number we have placed in the response.

(1) The authority's conclusions about its survey results do not adequately differentiate improvements made by homeowners related to primary program objectives from those made by homeowners related to ancillary program benefits. Specifically, the State Assistance for Earthquake Retrofitting (SAFER) program focuses on three major seismic improvements-foundation bolting, cripple wall reinforcement, and water heater bracing. However, as a convenience to the homeowner, the assessment report also identifies other structural, maintenance, and drainage problems and recommends appropriate improvements that may reduce damage to the home in the event of an earthquake. These ancillary improvements are not the reason the SAFER program provides free inspections and, thus, cannot be used to measure the effectiveness of the SAFER program. The survey question did not specifically ask the homeowners if they had made one of the three SAFER program improvements. Rather, the question asked was if the homeowners took any steps to retrofit or improve the seismic safety of their homes. Therefore, it is not clear whether the 47 percent of the homeowners who answered "yes" made improvements that were primary program objectives or ancillary program benefits of the SAFER program. In addition, the authority's logic also affects its conclusion that 49 percent of the homeowners who completed at least one of the recommended seismic improvements made all of the improvements recommended in the assessment reports because that percentage is a subset of the 47 percent. As we state on page 28, we believe the survey is a good first step in determining how many homeowners have completed all of the recommended retrofit improvements. However, the survey needs further analysis before the authority can use it to measure the success of the SAFER program.

(2) The authority overstates the importance of its interim program goals. We agree that the authority has made more homeowners aware of the steps required to retrofit their homes by providing detailed seismic assessment reports. However, such a goal is a limited measurement, even on an interim basis, of the success of the program in reaching its overall goal of achieving retrofits. As we state on page 36, the measure of success of the SAFER program is not the number of assessments completed, but the number of houses made more seismically secure.

(3) The authority's statement that "an unprecedented number of homeowners have already taken one or more steps to retrofit their homes" is based on the authority's interpretation of the results of its survey. As we discuss in the first comment above, this interpretation does not adequately differentiate between improvements made that are related to primary SAFER program objectives and those that are related to ancillary program benefits.

cc: Members of the Legislature
Office of the Lieutenant Governor
Milton Marks Commission on California State Government Organization and Economy
Department of Finance
Attorney General
State Controller
State Treasurer
Legislative Analyst
Senate Office of Research
California Research Bureau
Capitol Press