



## Hospital Seismic Safety

### Summary

Even with recent legislative changes, meeting deadlines for mitigating earthquake risk under California's sweeping hospital earthquake preparedness law, SB1953, could be problematic for as much as 50 percent of the at-risk health care infrastructure in the state. The challenges reflect shifting economic conditions and changed assumptions regarding both the feasibility of retrofitting existing facilities and the cost and complexity of building new structures. Closures could, in turn, reduce the availability of health care services in some communities, increase the economic pressure on surviving hospitals, and redistribute the supply of services.

Policy makers have worked over the past several years to minimize the negative effects of SB1953 without sacrificing the commitment to reducing the risk of hospital earthquake damage. Considerable progress has been made. Deadline extensions for publicly owned and financially challenged facilities offer some relief for the state's most economically vulnerable institutions. Additionally, the application of powerful new risk-reassessment software known as HAZUS is resulting in reclassification of many buildings previously considered to be at high risk of collapse.

Seismic retrofit issues are complex, involving enormous costs and potentially affecting a vast number of individuals and organizations. There will inevitably be trade-offs accompanying any long-term solutions. For California's policy and health care decisionmakers, waiting to act until the closure deadline looms

could result in an ad-hoc remedy that produces unintended consequences and dilemmas.

### UPCOMING DATES

**June 2009** Hospital reporting of construction efforts required by SB1661

**Late 2009** Completion of HAZUS evaluations

**2013** SB1953 deadline for most hospitals

### SB1953 – A Brief History

The January 1994 Northridge earthquake rendered parts of 11 hospitals unfit for occupation and resulted in \$3 billion in damage to the California health care system. In its wake, policymakers built on 1973 legislation mandating strict safety requirements for new hospital construction. SB1953, passed in 1994, put hospitals on a firm schedule for achieving seismic safety goals. Facilities deemed to be at greatest risk for collapse—so-called Structural Performance Category-1 (SPC-1) buildings—were required to mitigate the collapse risk by 2008 or face closure. The law further required that all at-risk hospital buildings—including those designated as SPC-2, structures not in danger of collapse—comply by 2030 to standards that would ensure continued operation in the event of a major earthquake.

Early estimates projected 40 to 70 million square feet, or approximately half of California's existing hospital floor space, must be rebuilt, retrofitted, or closed to inpatient use to achieve SB1953 compliance. About 80 percent of this infrastructure is located in the high-earthquake-hazard, high-density regions of Southern California and the Bay Area. Through extensions, the original SPC-1 deadline has been pushed out to 2013. Facilities making good-faith efforts but that are unable to finish by 2013 will be granted an additional two-year extension.

### Rethinking Risk

Because major strides in earthquake risk engineering have occurred in the years since SB1953 passed, a reassessment of the collapse risk facing many SPC-1 facilities is underway. The Office of Statewide Health Planning and Development (OSHPD) is reevaluating any SPC-1 building at the owner's request using HAZUS. As of mid-November 2008, 182 HAZUS revaluations had been completed. Of that group, 116 structures, or 64 percent of the buildings reassessed, had

achieved reclassification from SPC-1 to the lower-risk SPC-2 category. About one-third (359) of the initial SPC-1 buildings have applied for HAZUS reevaluation.

The extent to which the HAZUS process may offset concerns about hospital closures remains unclear. Many of the reclassified SPC-1 structures are smaller, rural facilities located in low-risk areas. However, a number of buildings in higher-risk and more densely populated areas—including San Jose, Santa Cruz, Riverside, Northridge, Los Angeles, Palm Springs, Whittier, and Fullerton—have likewise been reclassified. According to OSHPD, the reclassified SPC-1 buildings in high-risk areas generally are well-constructed, low-rise, wood-framed facilities, designs which historically have performed well in earthquakes.

A clearer picture of the overall impact of HAZUS likely will not emerge until the evaluation process is completed in late 2009 or early 2010. However, several assumptions can be made based on the work completed so far. Only about one-third of the approximately 1,070 SPC-1 buildings have applied for reevaluation. If that number doesn't increase significantly before the June 2009 application deadline, and if the current reclassification rate of 64 percent holds, about 840 SPC-1 buildings would face a reconstruction deadline of 2013 to 2015. What is not known is how many of them have already been rebuilt, retrofitted, or taken out of service.

In any event, reclassification only delays—but does not abate—SB1953's reconstruction requirement. A large percentage of the state's 70,797 acute care beds currently are in buildings that must be rebuilt no later than 2030.

### Roadblocks to Compliance

The difficulty of crafting complex infrastructure regulations like SB1953 with compliance deadlines set far in the future was underscored in a comprehensive assessment of the law prepared in 2007 by the RAND Corporation on behalf of the California HealthCare Foundation. RAND analysts concluded that half of the SPC-1 infrastructure likely would not achieve the 2013 deadline and a significant percentage would not meet the 2030 deadline. They estimated that only about 20 percent of SPC-1 space was being addressed through active construction projects as of January 2007. While this number has likely increased since the study was completed, an accurate count of projects currently underway won't be available until mid-2009 through SB1953

construction reporting requirements tied to SB1661 (passed in May 2006).

The RAND study highlights a cascading series of challenges that, in the analysts' view, have inhibited progress toward SB1953 compliance:

- ▶ SB1953 envisioned a phased strategy in which the buildings at greatest risk would be retrofitted to meet the initial deadline and then rebuilt 22 years later. However, retrofitting for some hospitals has proven to be a non-starter, given retrofit costs that are comparable to new construction and the operational disruptions that renovation entails.
- ▶ Because retrofit has not proved to be the relatively inexpensive and speedy fix that lawmakers had anticipated, the 2030 deadline for many at-risk facilities has been accelerated 15 to 17 years.
- ▶ The timeline between initial construction planning and new hospital occupancy can stretch as long as ten years. Even under the most aggressive approach, a minimum of five years typically is required to plan, permit, approve, and construct a new hospital. Thus, all hospitals opting for full replacement should have begun their planning process no later than January 2008.
- ▶ Demand exceeds supply for qualified hospital designers and contractors as well as for the internal health care skills needed to plan and execute complex hospital projects.
- ▶ The cost of new hospital construction has soared since 1994, doubling since 2001 and accelerating at a rate 14 percent above the Consumer Price Index over the past three years. RAND researchers estimated the total cost of retrofitting or rebuilding all SPC-1 buildings at \$45 to \$110 billion, although that range could double when financing costs are included. Bringing less-vulnerable SPC-2 hospitals into compliance would add an additional 20 percent to the total.
- ▶ Hospital operating income remains under pressure and in most instances will not support the cost of SB1953 compliance. According to the RAND analysts, the per-square-foot cost of new hospital construction (\$575) exceeds the average per-square-foot hospital profitability by \$275 to \$375. Thus, financing for much of the SPC-1 replacements will have to come from sources other than ongoing hospital operations, and may result in significant cost increases passed on to private and public payers.

## Potential Mitigating Factors

In addition to the HAZUS reevaluations, other things have changed since the RAND study. The timeframe for new hospital construction has been shortening due to a streamlined OSHPD review and approval process. Also, there has been widespread use of advanced design-build software that sharply reduces rework and attendant delays on large, complex hospital projects. While hard data on the number of facilities that have begun work on SB1953 compliance won't be available until June 2009, a surge in new hospital construction projects approved in the most recent fiscal year—from an average of about \$2 billion in new construction annually to \$8 billion in FY2009—suggests a growing number of hospitals are beginning to address the SB1953 challenge. Finally, OSHPD representatives assert that retrofitting has emerged as a viable, lower-cost option for many hospitals.

## Hospital Closures

It is difficult to determine how many facilities could be forced to close due to noncompliance with SB1953 or what impact the closures may have on access to services and health care costs. However, a preliminary model of the consequences of SB1953 noncompliance was conducted in 2007 by Kurt Salmon Associates on behalf of the California HealthCare Foundation. The findings suggest that approximately 20 percent of the hospitals in three sample communities—Alameda/Contra Costa Counties, Riverside County, and San Diego County—may be at risk for closure. If the hospitals closed, between 25 and 35 percent of the communities' remaining hospitals likely would have to absorb the volume. Such a volume increase, in turn, could result in a reconfiguration of service offerings at the surviving hospitals; a need for additional capital to fund expansion; and the loss of some services or subspecialties in the affected communities.

Any hospital closures triggered by SB1953 will coincide with many of California's Baby Boomers turning 65. According to a 2008 CHCF study, the state's 65+ population will double between 2000 and 2030 to 8.8 million, or 18 percent of the population. In spite of steady decreases in admission rates and length of stay for seniors, this population growth rate will stress acute care capacity. Even without SB1953 closures, the aging boom could lead to hospital bed shortages in three of seven large-population regions surveyed statewide.

However, solutions must take into account the significant variation in use of hospital services by region. CHCF's work with the Dartmouth Atlas of Health Care research team has shown that the length of stay and amount of physician services delivered per patient are higher in Southern California than in other parts of the state. Such disparities can be seen as an opportunity to examine best practices across the state and to meet increased bed need through greater efficiency.

## Policy Options

Policymakers are presented with a number of options when confronting the approaching SB1953 deadlines, including:

- ▶ **Push ahead with SB1953 implementation.** This approach could lead to significant disruption, since the state may be forced to close large numbers of noncompliant hospitals in 2013, 2015, and 2030. Although the threat of closure could provide a critical incentive to comply with SB1953, it may also produce large-scale negative effects on the availability and distribution of health care services in California. Those expected to feel the effects of closures most acutely will be lower-income, under-insured, or uninsured residents in urban areas with high seismic risk.
- ▶ **Increase efficiency and encourage alternatives to acute hospital care.** Given the shift away from the acute care environment, revisiting SB1953 would provide a unique opportunity to globally reassess the state's acute care infrastructure with an eye toward rationalizing the system for future needs.
- ▶ **Modify or eliminate SB1953's requirements so most facilities can comply.** While this approach would ease pressures on acute care availability, it would have two negative side effects. First, seismic vulnerability would remain mostly unaddressed. After the next big earthquake, this could lead to questions about why the vulnerability had not been properly ameliorated. Second, it would raise questions of policy fairness, given that a significant number of California hospitals already have made large investments in projects to comply with the original law.
- ▶ **Provide public funding for hospitals that are unable to comply with SB1953.** Hospitals are critical public facilities and the state has a history of funding seismic strengthening of public infrastructure. However, this approach also would raise fairness questions among hospitals that already have

invested in SB1953 and could trigger public debate about the best use of taxpayer funds for health care purposes.

- ▶ **Develop a targeted solution that incorporates a mix of compliance waivers, funding assistance, and incentives.** “One-size-fits-all” compliance mandates do not take into account the unique circumstances facing individual hospitals. A case-by-case assessment might consider the institution’s seismic risk level, financial strength, quality of care, patient population served, and other factors. Such a nuanced approach could help prioritize mitigation, minimize service disruptions, and help financially vulnerable hospitals address earthquake risk in a timely but realistic fashion.

### Balancing Public Risk and Public Health

Given the significant financial investment contemplated for earthquake risk mitigation, developing a sound strategy for meeting the future health care needs of the population of California must be considered in evaluating any solution.

Virtually all of the state’s at-risk facilities eventually will be replaced and rebuilt to earthquake-resistant standards as part of the normal modernization and replacement process, irrespective of SB1953. Unfortunately, this could take more than 50 years, a period during which California is highly likely to experience a large and damaging earthquake. The task therefore is to accelerate the natural replacement cycle without jeopardizing public health in individual communities.

In June 2009 more information will be available to policymakers to help determine the need for further policy interventions.

### ABOUT THE FOUNDATION

The **California HealthCare Foundation** is an independent philanthropy committed to improving the way health care is delivered and financed in California. By promoting innovations in care and broader access to information, our goal is to ensure that all Californians can get the care they need, when they need it, at a price they can afford. For more information, visit [www.chcf.org](http://www.chcf.org).

**Facts & Findings for Policymakers** is published on an occasional basis to synthesize the most current information on selected topics of interest to legislators and regulators.

### RELATED RESOURCES

#### **Seismic Safety: Will California Hospitals Be Ready for the Next Big Quake?**

This CHCF-funded report by RAND Corporation examines the progress California hospitals have made toward meeting SB1953 deadlines. It outlines the significant compliance challenges hospitals face, as well as policy choices.

[www.chcf.org/topics/hospitals/index.cfm?itemID=129370](http://www.chcf.org/topics/hospitals/index.cfm?itemID=129370)

#### **Beds for Boomers: Will Hospitals Have Enough?**

This snapshot analyzes expected growth in California’s over-65 population and its possible impact on the need for acute care beds. As hospitals respond to earthquake safety upgrades, they will need to focus on the efficiency of hospital care in order to meet demand without unnecessarily increasing supply.

[www.chcf.org/topics/hospitals/index.cfm?itemID=133749](http://www.chcf.org/topics/hospitals/index.cfm?itemID=133749)

#### **California Hospital Financial Performance Dashboard**

This CHCF-funded interactive tool enables users to look up data from the California Office of Statewide Health Planning and Development (OSHPD) on any California hospital.

[www.chcf.org/topics/hospitals/index.cfm?itemID=131619](http://www.chcf.org/topics/hospitals/index.cfm?itemID=131619)

#### **Tracking the Care of Patients with Severe Chronic Illness**

This report from the Dartmouth Atlas of Health Care 2008 shows how care for Medicare beneficiaries with serious chronic illness varies across U.S. states, regions, and hospitals.

[dartmouthatlas.org/atlases.shtm](http://dartmouthatlas.org/atlases.shtm)

#### **OSHPD Facilities Development Division**

This Web site of the California Office of Statewide Health Planning and Development provides a wide array of information concerning seismic safety and hospitals.

[www.oshpd.ca.gov/fdd/index.html](http://www.oshpd.ca.gov/fdd/index.html)

#### **Senate Bill 306** (Chapter 642, Statutes of 2007)

[www.leginfo.ca.gov/cgi-bin/postquery?bill\\_number=sb\\_306&sess=PREV&house=B&author=ducheny](http://www.leginfo.ca.gov/cgi-bin/postquery?bill_number=sb_306&sess=PREV&house=B&author=ducheny)

#### **Senate Bill 1838** (Chapter 693, Statutes of 2006)

[www.leginfo.ca.gov/cgi-bin/postquery?bill\\_number=sb\\_1838&sess=0506&house=B&author=perata](http://www.leginfo.ca.gov/cgi-bin/postquery?bill_number=sb_1838&sess=0506&house=B&author=perata)

#### **Senate Bill 1661** (Chapter 679, Statutes of 2006)

[www.leginfo.ca.gov/cgi-bin/postquery?bill\\_number=sb\\_1661&sess=0506&house=B&author=cox](http://www.leginfo.ca.gov/cgi-bin/postquery?bill_number=sb_1661&sess=0506&house=B&author=cox)

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