

NORTHRIDGE **30** 1994 2024

The Northridge Earthquake - 30 Years Later *A Catalyst for Engineering Resilient Communities*

Webinar Series

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2

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3

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The Northridge Earthquake - 30 Years Later *A Catalyst for Engineering Resilient Communities*

Episode 1: The January 17, 1994 Northridge Earthquake – Science & Engineering Aspects

K. Hudnut, J. Stewart, C. Davis, D. Cocke

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Episode 2: Insurance Issues and Impacts Following the Northridge Earthquake

C. Scawthorn, J. Maffei

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4

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Episode 3: 30 Years of Progress in Quantification of Seismic Hazards

Y. Bozorgnia

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Episode 4: An Unexpected Milestone in Real-Time Loss Estimation

R. Eguchi, D. Wald

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5

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Episode 5: Legacies of the Northridge Earthquake in Disaster Recovery Planning and Policy

Laurie Johnson, Principal, Laurie Johnson Consulting | Research

Rob Olshansky, Prof. Emeritus, Univ. of Illinois at Urbana-Champaign



6

The Northridge Earthquake – 30 Years Later
A Catalyst for Engineering Resilient Communities

Legacies of the Northridge Earthquake in Disaster Recovery Planning and Policy

Presenters:

Dr. Laurie Johnson FAICP
Laurie Johnson Consulting | Research

Dr. Robert Olshansky FAICP
University of Illinois at Urbana-Champaign



(Photo By Hans Gutrecht, Los Angeles Daily News/SONG)

7

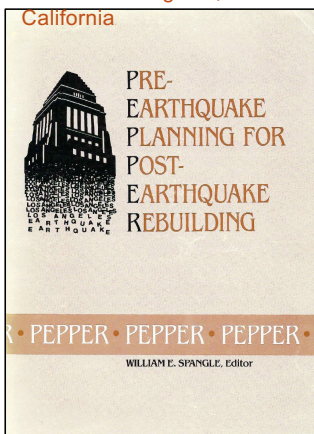
Presentation Outline

- Pre-Earthquake Planning for Post-Earthquake Recovery (PEPPER) study
- Los Angeles Recovery and Reconstruction Plan and the formalization of pre-disaster recovery planning by FEMA, Cal OES, and across the world
- Longitudinal comparative study of rebuilding in Los Angeles and Kobe following the 1994 and 1995 earthquakes
- Hollywood study district, Hollywood Redevelopment Plan
- Importance of redevelopment authorities and financing to disaster recovery
- Sherman Oaks study district, Ghost Towns and LA Housing Department's (LAHD) housing repair programs
- Importance of US HUD Community Development Block Grant – Disaster Recovery (CDBG-DR) program to disaster recovery

8

PEPPER Pre-Earthquake Planning for Post-disaster Recovery

1980s: Los Angeles,
California

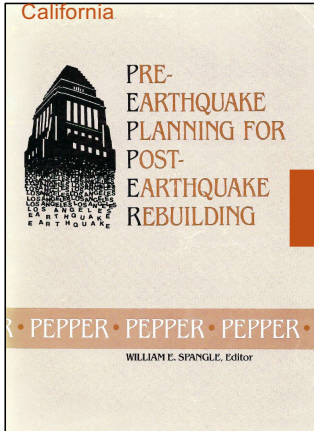


- Study funded by the National Science Foundation) worked with the City of Los Angeles to estimate building losses for four scenario earthquakes.
- First-ever citywide earthquake loss estimation study of its kind, relying upon city's land use planning and management system (a first-ever citywide GIS developed by the early ESRI)
- Developed an inventory of structure types and occupancies and estimated the probable extent and severity of damage in each of the city's 35 planning areas
- Resulting building loss estimates ranged from \$800 million to \$4 billion (1982 dollars) (equivalent to \$2.6 - \$13 billion in 2024) with a M6+ scenario underneath downtown LA being the most damaging

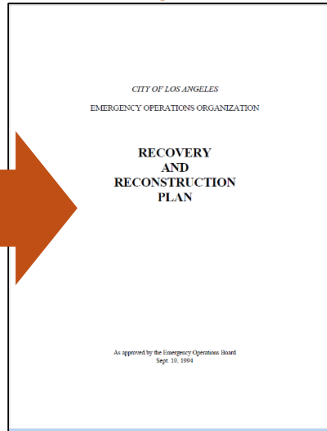
9

City of LA Undertakes Pre-disaster Planning for Post-disaster Recovery

1980s: Los Angeles, California

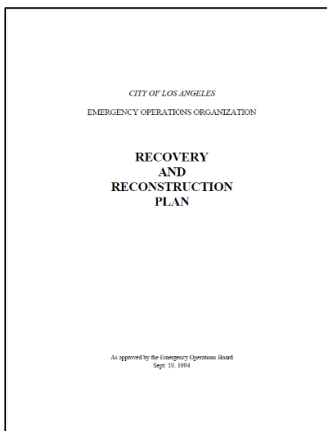


1990s: Los Angeles



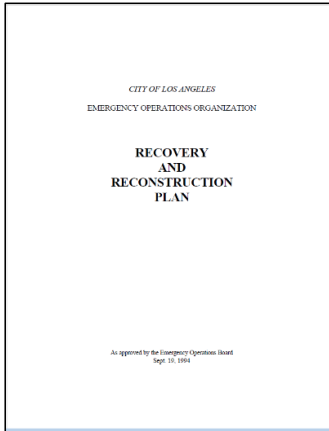
- City initiated planning in late 1980s after the completion of the PEPPER study
 - Several citywide workshops and exercises as part of plan development
 - Ken Topping, former LA City Planning Director, was a consultant to the planning project
- Draft plan used following 1992 riots. Revisions made and plan under review and adoption by city's Emergency Operations Board in late 1993
- Plan revised again based on lessons from the Northridge earthquake and formally adopted on January 17, 1995—one year anniversary

Structure of LA's 1993 draft Recovery and Reconstruction Plan



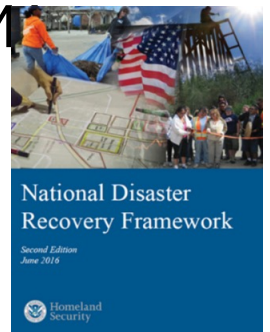
- 63 policy statements and 300 implementation actions organized into 8 topical areas:
 - Residential, commercial and industrial rehabilitation
 - Public sector services
 - Economic recovery
 - Land use/reuse
 - Organization and authority
 - Psychological rehabilitation
 - Vital records
 - Interjurisdictional relationships
- Pre- and post-event implementing actions
- Each action identifies the lead department(s) or agency(s) in the city as well as others to be involved

Evaluation of the Use of LA's 1993 draft Recovery and Reconstruction Plan after the Northridge Earthquake



- Spangle Associates & Robert Olson Associates, 1997, NSF-funded study; 20 interviews with 39 staff
- Organizational structure to stand up a new Recovery and Reconstruction division of the Emergency Operations Organization, to be led by city planning department, didn't occur.
 - Planning department distributed copies of the plan
 - Post-earthquake leadership carried out by city council's ad hoc committee for earthquake recovery, mayor's office, and chief administrator's office
- City departments and agencies all carried out their major responsibilities assigned in the plan
 - Staff had accomplished most of the pre-event actions ahead of the earthquake, which helped them to be better prepared
 - Staff knew their roles after years of participation in plan preparation, exercises and actual use

National Disaster Recovery Framework (FEMA 2011; 2016)



NDRF Core Principles:

- Individual and Family Empowerment
- Leadership and Local Primacy
- Pre-Disaster Recovery Planning
- Partnerships and Inclusiveness
- Public Information
- Unity of Effort
- Timeliness and Flexibility
- Resilience and Sustainability

Organizational structure centers on

8 Recovery Core Capabilities

- Housing
- Infrastructure Systems
- Economic Recovery
- Health and Social Services
- Natural and Cultural Resources
- Planning
- Public Information and Warning
- Operational Coordination

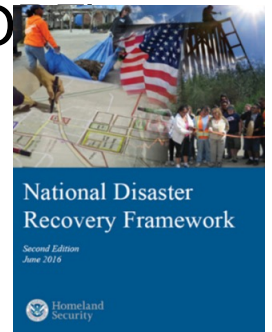
Recovery Support Functions in the 1st edition of the NDRF

Common to all federal disaster management mission areas, including recovery

Identifies for each: Coordinating agencies, Primary agencies, and Supporting agencies

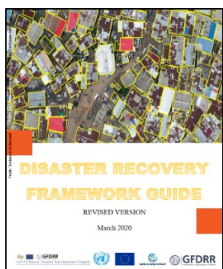
California Disaster Recovery Framework (CDRF) (Cal OES, 2019)

- Similarly structured like the NDRF
- Further defines the role of the State Disaster Recovery Coordinator and an organizational structure for state recovery operations, identifying state-level coordinating, primary and supporting agencies for each of 6 RSFs:
 - Community Planning & Capacity Building
 - Infrastructure
 - Housing
 - Health and Social Services
 - Economic
 - Cultural and Natural Resources
- CDRF encourages local governments to similarly structure their recovery operations (a few California cities have developed pre-disaster recovery frameworks)

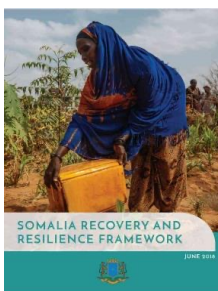


Institutionalization of Pre-disaster Recovery Planning and Disaster Recovery Frameworks

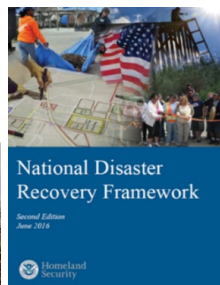
- Since 2000s, more planning for recovery operations being done ahead of disaster, with pre-disaster recovery frameworks and guides developed by many countries and international agencies



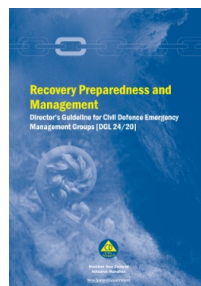
UN/World Bank guides since at least 2010



Somalia framework released in 2018



USA began work on guidance after 2005 Hurricane Katrina



New Zealand's first local recovery planning guide published in 2005



Australia's first national framework was released in 2020



Japan pre-disaster recovery planning handbook and database (2021)



Philippines Ready to Rebuild (R2R) toolkit and training program launched in 2022

Pre-Disaster Organizational-Focused vs. Post-Disaster Project-Focused Recovery Planning

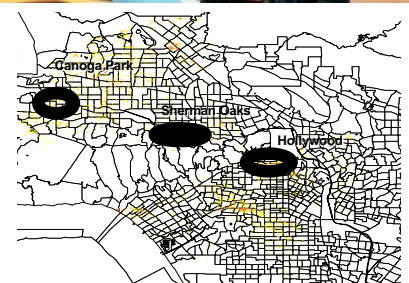


<https://www.caloes.ca.gov/wp-content/uploads/Recovery/Documents/Planning-for-Disaster-Recovery-Fact-Sheet-November-2023-508-Compliant.pdf>

16

US/Japan longitudinal comparative study of rebuilding in Los Angeles and Kobe (NSF study, 1998 – 2005)

- Long-term study of factors facilitating reconstruction
 - Complexity of property ownership patterns
 - Nature and availability of financing
 - Existence and impact of plans
 - Institutional framework (local government, planning agencies, community organizations)
 - Regulatory framework (government land use and redevelopment policies)
- Recovery tracked in neighborhoods
 - 3 in Los Angeles (Hollywood, Sherman Oaks and Canoga Park)
 - 4 in Kobe/Ashiya (Shin-Nagata, Misuga, Shin-Zaike, Ashiya)
- Recovery literature and recovery frameworks in Los Angeles and Kobe also documented



LA County 1994 Damage data with study areas outlined

17

Hollywood Study District

Hollywood Redevelopment Plan and Pre-Northridge Conditions



Hollywood Boulevard, 1944

Source: https://waterandpower.org/museum/Early_Views_of_Hollywood_%281920_+%29_11_of_12.html

- 1930s/1940s - Film industry driven development
- 1950s/1960s - Film studios and development, moved north into San Fernando Valley.
- By mid-1970s, many glamorous Art-Deco structures were deteriorating

18



View looking east on Hollywood Boulevard at Highland Ave, 1975

Source: https://waterandpower.org/museum/Early_Views_of_Hollywood_%281920_+%29_12_of_12.html

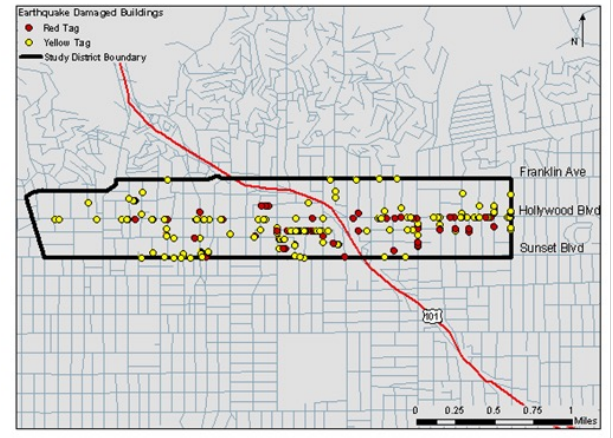
Hollywood Study District - Hollywood Redevelopment Plan and Pre-Northridge Conditions

- 1973 - Hollywood Community Plan adopted (as part of LA City Plan) identified area as a *regional center commercial district*, with taller and denser residential and commercial zoning allowed
- 1975 - Hollywood Boulevard Commercial and Entertainment District listed on the National Register of Historic Places
- 1986 - Hollywood Redevelopment Plan adopted and established the Los Angeles Community Redevelopment Agency (CRA) as the city's leading planning agency for the 1,107-acre project area.
 - All development plans (public or private) had to conform to Redevelopment Plan with review and approval by CRA.
 - Initial budget for the 30-year project was nearly \$1 billion
 - Project had legal authorities allowable under California Community Redevelopment Law, including property acquisition, ownership, demolition, and occupant relocation.
- 1990 Population: 37,247

19

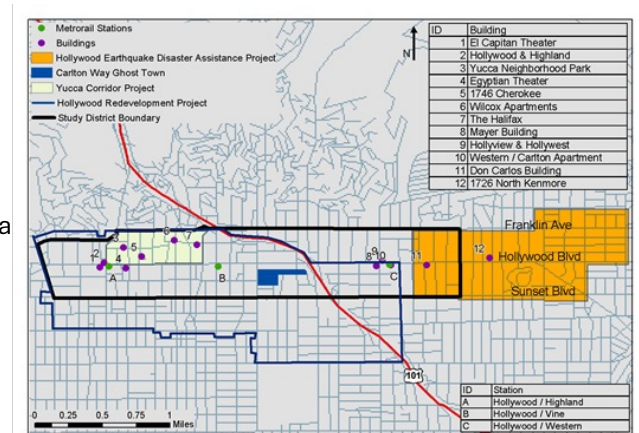
Hollywood Study District - Northridge Earthquake Damage

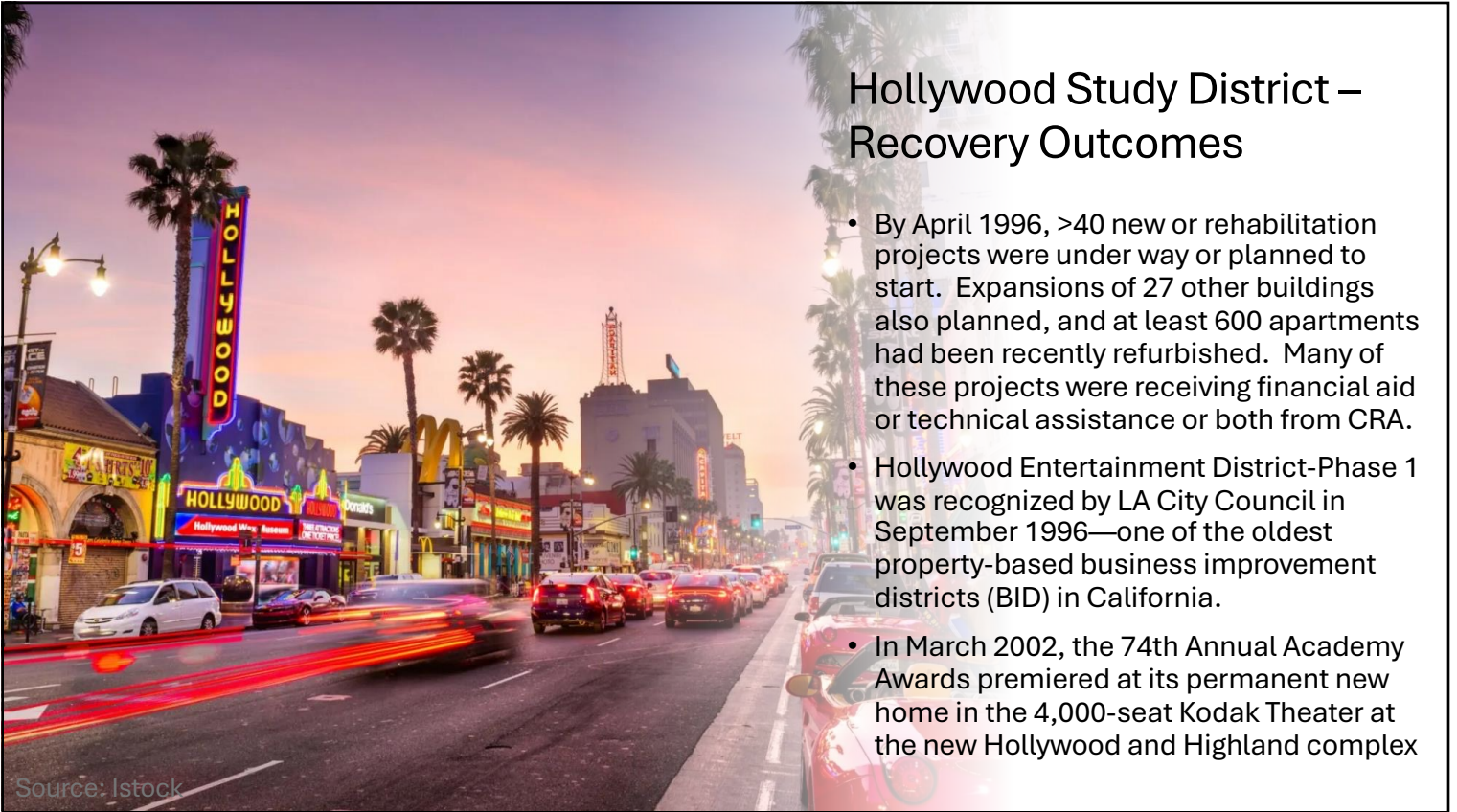
- By most accounts, Hollywood’s economy bottomed out between 1992 and 1994, and the Northridge earthquake was the final and defining blow
- 69 red-tagged and 130 yellow-tagged buildings, with much of the damage in older strengthened and unstrengthened masonry buildings, as well as to older reinforced concrete residential and commercial buildings.
 - Red-tagged buildings contained about 350 housing units and yellow-tagged buildings contained about 1,500 housing units
 - Significant low-income, immigrant population impacted by the housing losses



Hollywood Study District - Recovery Efforts

- Police Department and City Attorney’s office focused on addressing crime and building nuisances in Yucca Street corridor
- Los Angeles Housing Department (LAHD) designated a “ghost town” in Carlton Way/Selma Avenue neighborhood
- CRA established an earthquake disaster assistance redevelopment project in East Hollywood/Normandie Ave area
- CRA combined funding resources to implement Hollywood Redevelopment Plan goals and rehabilitate buildings:
 - \$8 mn Community Development Block Grant - Disaster Recovery (CDBG-DR) funds (on a matching basis) to owners and tenants to rehabilitate historically or architecturally significant commercial buildings or for new buildings/businesses
 - \$558,000 in CDBG-DR funds to administer final phase of Commercial Area Revitalization Effort (CARE) Façade Program for LA Community Development Dept
 - \$3 mn in insurance proceeds for CRA-owned damaged properties
 - \$7 mn in financial relief to commercial building owners impacted by Metro Rail subway construction
- Other key recovery funds used (by public and private entities) in Hollywood included: City’s housing loan program, FEMA’s Hazard Mitigation Grant Program and Public Assistance funds, historic preservation grants, and SBA loans





Hollywood Study District – Recovery Outcomes

- By April 1996, >40 new or rehabilitation projects were under way or planned to start. Expansions of 27 other buildings also planned, and at least 600 apartments had been recently refurbished. Many of these projects were receiving financial aid or technical assistance or both from CRA.
- Hollywood Entertainment District-Phase 1 was recognized by LA City Council in September 1996—one of the oldest property-based business improvement districts (BID) in California.
- In March 2002, the 74th Annual Academy Awards premiered at its permanent new home in the 4,000-seat Kodak Theater at the new Hollywood and Highland complex

22

Importance of redevelopment authorities and financing to disaster recovery

- Spangle Associates' NSF study, *Redevelopment After Earthquakes (2003)*, looked at use of redevelopment in 11 cities following earthquakes and other disaster. They found that redevelopment agencies are highly effective in planning and financing post-disaster reconstruction
- 2011 Budget Act, California Legislature approved the dissolution of the state's 400 plus Redevelopment agencies, effective February 1, 2012. Each redevelopment agency was replaced by a "successor agency to the redevelopment agency" that managed the wind-down process under the auspices of the California Department of Finance.
- 2014 state legislation created Enhanced Infrastructure Financing Districts (EIFDs) as an improved replacement to redevelopment agencies is a type of special financing district that uses a portion of the tax increment generated by the existing 1% property tax generated by community growth from a specifically defined area to finance public infrastructure and economic development projects of community-wide significance.

23

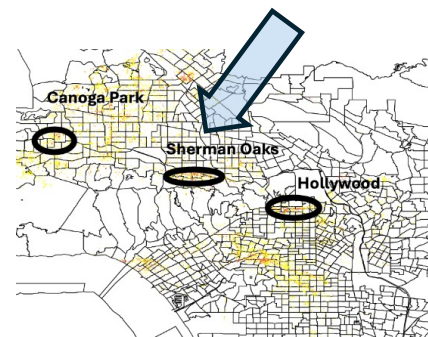
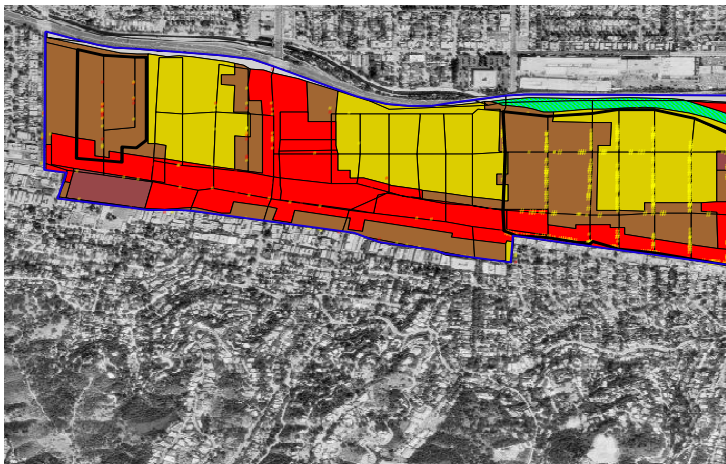
Sherman Oaks study district, Ghost Towns and use of US HUD block grants for disaster recovery

- Sherman Oaks study area exemplifies the value of using HUD block grants, tailored to specific disaster circumstances, as a reconstruction tool.
- This has changed the way we fund disaster recovery, which will include the next California earthquake.



24

Sherman Oaks Study District

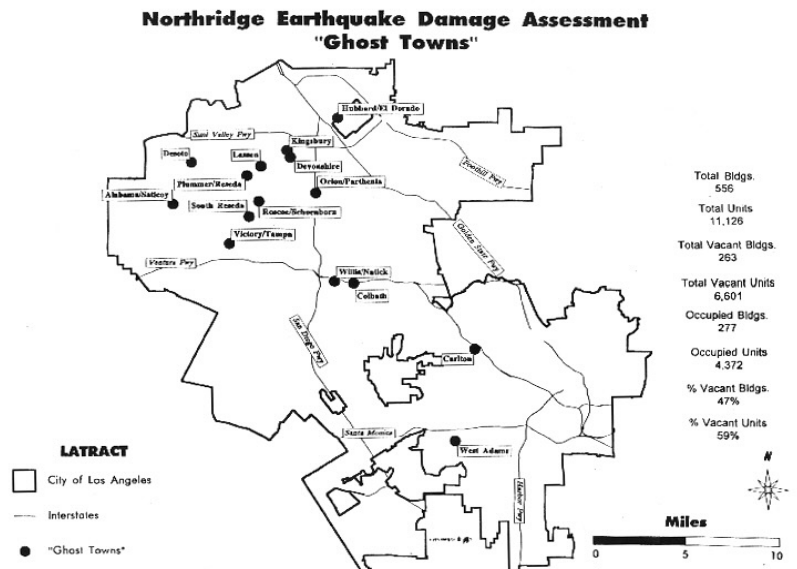


- Highest concentration of damages.
 - But as a relatively high-income area, private resources helped.
- Red- and yellow-tagged buildings contained 3,116 housing units, 34.8% of the study district's housing.
- Contained 2 significant "ghost towns"

25

Damaged multifamily housing: “Ghost Towns”

- 17 “Ghost Towns” - pockets of damaged and abandoned apartments and condominiums
 - Areas with >60% housing units heavily damaged or destroyed
- Features:
 - Vacancies and blighted conditions attracted gangs and crime
 - Deflated property values, declining rental income, and high debts limited owners' abilities to get loans and make repairs



26

City’s “ghost town program” initially focused on stabilizing ghost town neighborhoods

- LA Housing Dept. (LAHD) monitored Ghost Town progress.
- City depts. prepared a security plan for the neighborhoods, supported by special FEMA funding.
- Found that most owners lacked insurance, did not qualify for Small Business Administration (SBA) loans, and were unable to get private loans/financing.



27

Solution: Multi-Family Rental Property Program, funded by HUD Block Grant

- LAHD obtained \$320 million from HUD to assist residential properties declined by SBA.
- Came via a “block grant” enabled by supplemental Congressional funding provided in February and September 1994.
- For existing property owners:
 - Max. loan \$35,000 per unit
 - 0% interest rate; payments deferred for 5 years
- For new property owners:
 - 0% to 3% interest rate; payments deferred for 4 years

28

Loan program results

- By December 1995, most of city funds had been loaned; LAHD expedited loan applications (<30 days).
- Some developers began buying & repairing buildings w/ private financing.
- By January 1996, >65% of Ghost Town units had loans and repairs underway.
- By January 1999, nearly all units repaired.



29

Success was due to the block grant model

- HUD's block grants allow grantees to create programs to fit their needs.
- LA could design the loan program for the specific conditions of the Ghost Towns.
- Where did this program come from, and what has happened to it since?

30

Community Development Block Grants (CDBG)

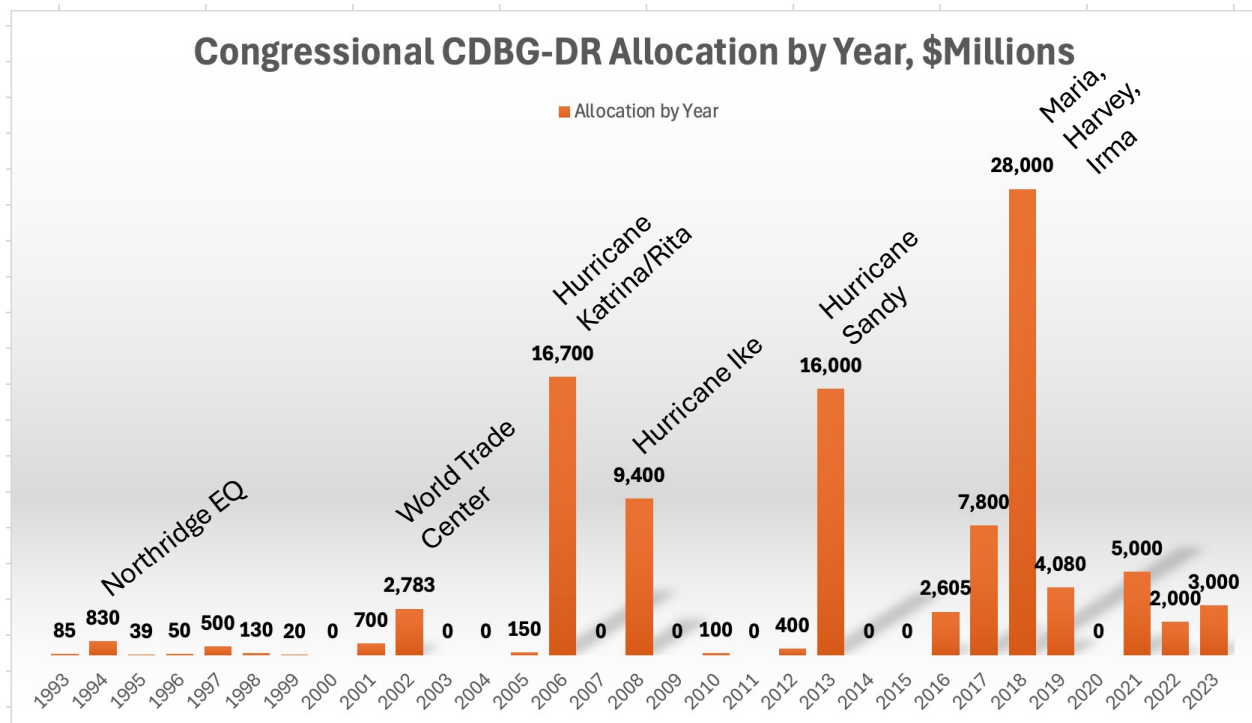
- Since 1974, HUD has provided annual CDB grants, on a formula basis
 - to states and entitlement communities (metro areas and cities)
 - for community development projects, such as housing, infrastructure, economic development, social services.
- In 1992, Congress provided supplemental CDBG funding for disaster recovery after Hurricane Andrew (\$90M), and in 1993 for the Midwest floods (\$449M to 9 states).
 - Using an existing program as a vehicle for disaster recovery funding was innovative.



31

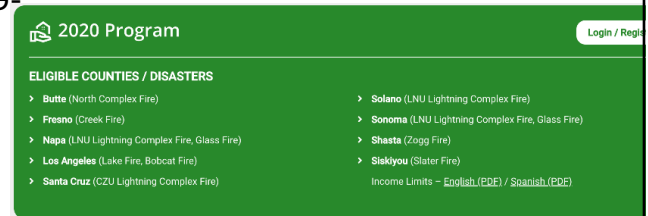
CDBG after the Northridge Earthquake

- In February and September 1994, Congress provided \$399M to Southern California for earthquake recovery, \$308M of which went to the City of Los Angeles for the rental housing loan program.
- This was the largest such grant to a municipality until the 9/11 block grant to NYC in 2001.
- The success of this grant in efficiently catalyzing LA's recovery has led to a rapid expansion of CDBG for disaster recovery.
- Now called CDBG-DR, its annual budget exceeds standard CDBG's (in 2023, it was \$5.0B vs. \$3.3B).



CDBG-DR is now central to disaster recovery

- Annual Congressional allocations for multiple disasters are now routine. Since 2015, some funds are earmarked for mitigation (CDBG-MIT).
- The grants generally tend to go directly to states.
- Since 2016, California has received \$1.6B in CDBG-DR, distributed to grantees through the California Dept. of Housing and Community Development (HCD).
- HCD routinely awards recovery grants through its ReCoverCA program, for multiple disasters.

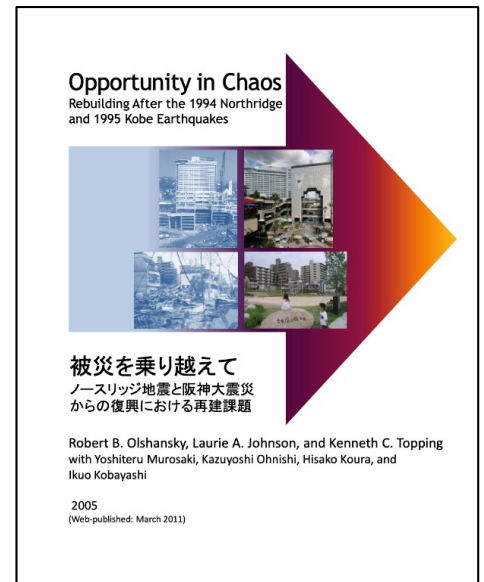


The next large California earthquake will need CDBG funding for recovery

- With the lack of widespread homeowner EQ insurance coverage, there will be a high demand for housing repair programs.
- It's likely to be funded by CDBG (if Congress is willing), and run by experienced staff at HCD.
- It will likely include a large mitigation component.

Wrap-up: Some planning lessons from Northridge (and Kobe)

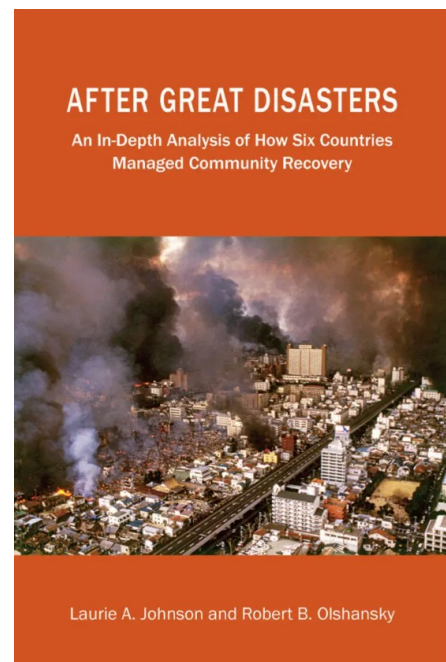
- Previous plans and pre-existing institutional structures make the process much easier.
- External funding (insurance and public) makes a huge difference for regional recovery.
- Disasters have winners and losers.
- Disasters provide opportunities for land use improvement.
- Community involvement is vital, especially if widespread reconstruction is needed.
- Reconstruction needs time to be accomplished thoughtfully.
- Land tenure issues complicate reconstruction.



Can download full 2005 report from [LFE website](#)

36

- More lessons from U.S. disasters
 - 9/11
 - Katrina
 - Sandy
- Plus...
 - Japan
 - New Zealand
 - Indonesia
 - China
 - India



Free download from Lincoln Institute
<https://www.lincolninst.edu/publications/books/after-great-disasters/>

37

The Northridge Earthquake – 30 Years Later
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Thank You!

Questions?



Former tenants Joan DeWolf and Gary Benoit carry suitcases to salvage possessions from the Northridge Meadows Apartments. July 15, 1994. Los Angeles Daily News

38

The Northridge Earthquake - 30 Years Later

A Catalyst for Engineering Resilient Communities

Webinar Series

Q&A

The recording of today's webinar will be posted within a week at
EarthquakeCountry.org/northridge30-webinar5
and SoCal.EERI.org



39