

Introduction to Functional Recovery and Latest Updates from 2026 NEHRP PUC FRTC

How did we get here?

Why is it needed?

Where are we going?

Update on provisions development

Northridge30 Symposium
January 17, 2024

Ryan Kersting, SE

PUC Functional Recovery Task Committee Chair,
Principal, Buehler Engineering



FEMA

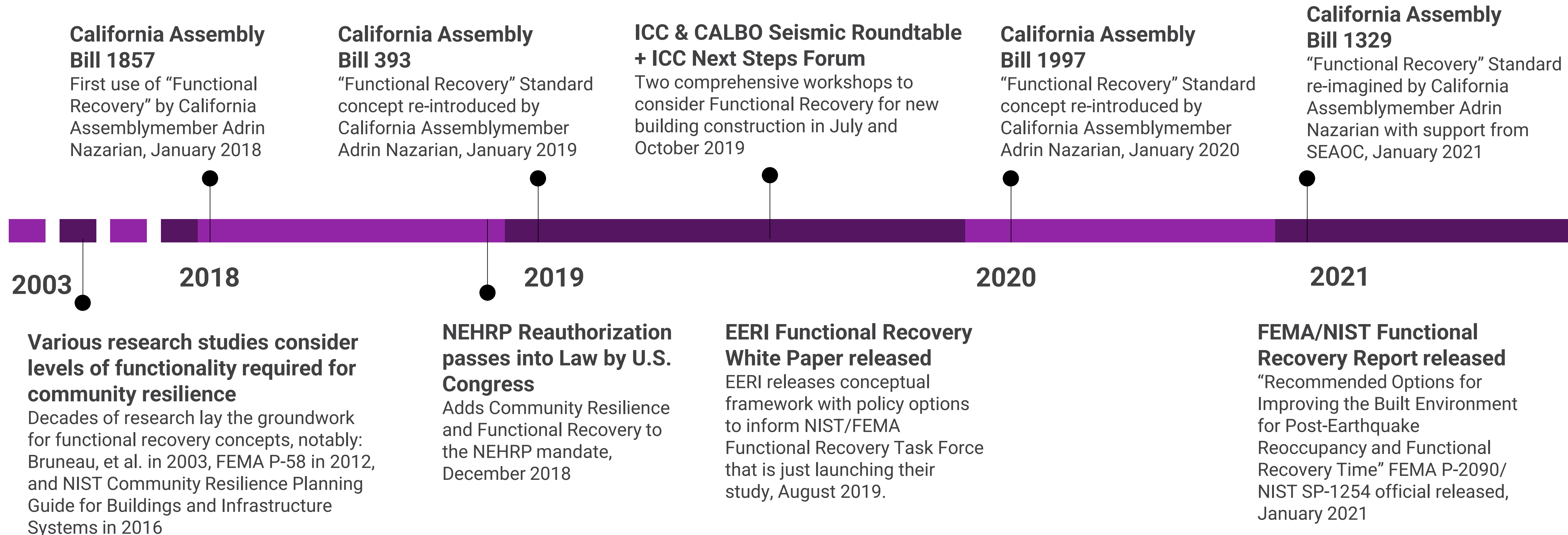


Building Seismic
Safety Council

Functional Recovery Introduction & Updates

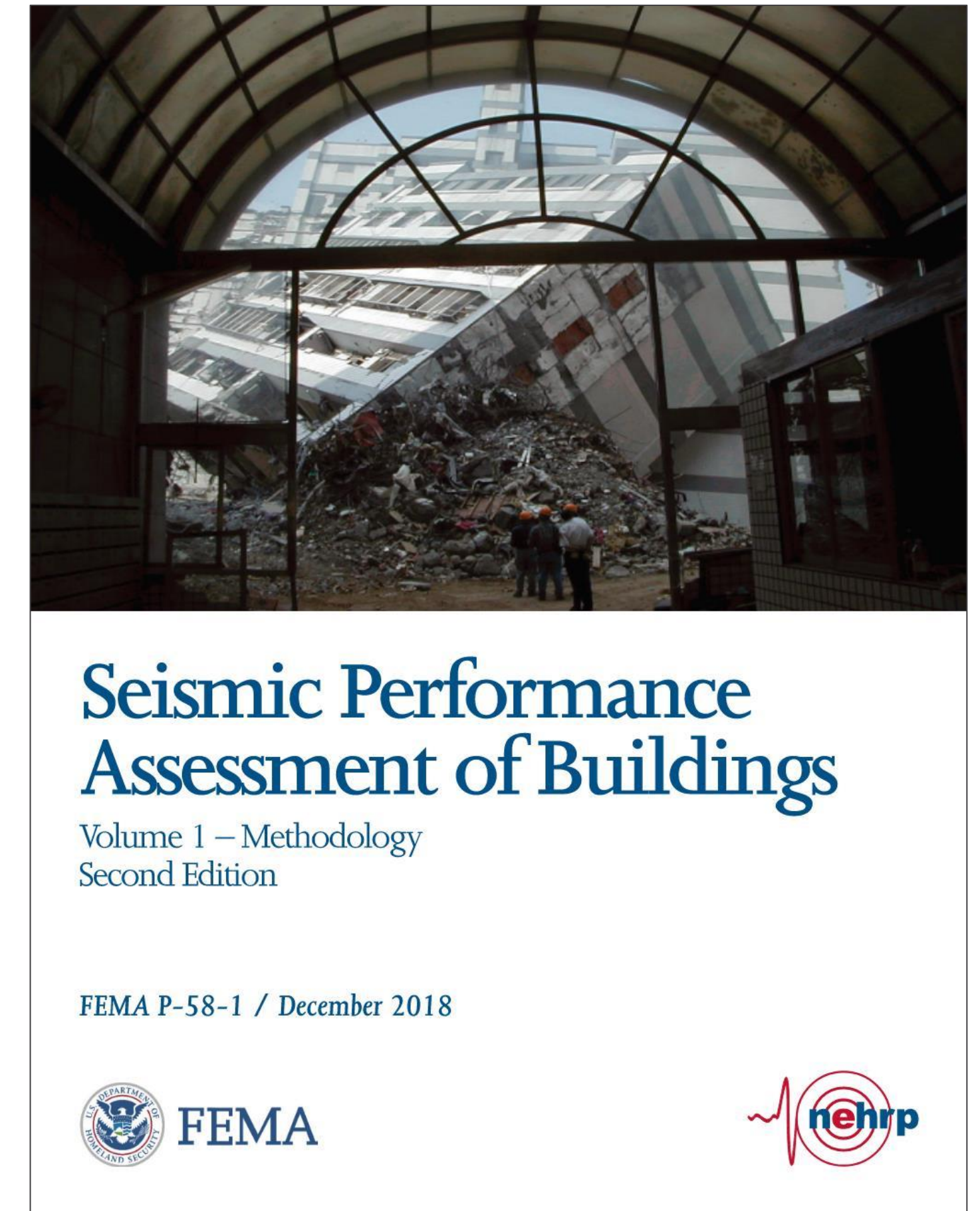
- Functional Recovery
 - What is it?
 - How did we get here?
 - FEMA-NIST Report to Congress
- 2026 NEHRP PUC Functional Recovery Task Committee
 - Where are we going?
 - Updates on progress...

Functional Recovery - How did we get here?



Functional Recovery - How did we get here?

- FEMA P-58 Project
 - Significant investment of NEHRP resources and attention over the last +/- 20 years
 - “Next Generation” Performance-based Seismic Design
 - Quantify seismic building performance in understandable metrics:
 - Safety
 - Repair Cost
 - Recovery Time
 - Carbon Impact of Repair



<https://femap58.atcouncil.org/documents/fema-p-58/24-fema-p-58-volume-1-methodology-second-edition/file>

<https://femap58.atcouncil.org/documents/fema-p-58/27-fema-p-58-volume-5-expected-performance/file>

What is Functional Recovery?

What is Functional Recovery?

Definitions from FEMA-NIST Special Publication (FEMA P-2090 / NIST SP-1254):

Functional recovery is a post-event (e.g., post-earthquake) performance state in which a building or lifeline infrastructure system is maintained, or restored, to safely and adequately support the basic intended functions associated with the pre-event use or occupancy of a building, or the pre-event service level of a lifeline infrastructure system.

Basic intended functions are less than full functionality, but more than what would be considered the minimum sufficient for reoccupancy of buildings, or for temporary provision of lifeline services. In simpler terms, functional recovery for a building means it is ready to support most of its pre-event uses in addition to reoccupancy.

What is Functional Recovery?

Definitions from FEMA-NIST Special Publication (FEMA P-2090 / NIST SP-1254):

A functional recovery objective is functional recovery achieved within an acceptable time following a specified hazard event (e.g., earthquake), where the acceptable time might differ for various building uses and occupancies, or lifeline services.

Functional recovery involves designing buildings to recover basic functions when our communities need those services after an earthquake;

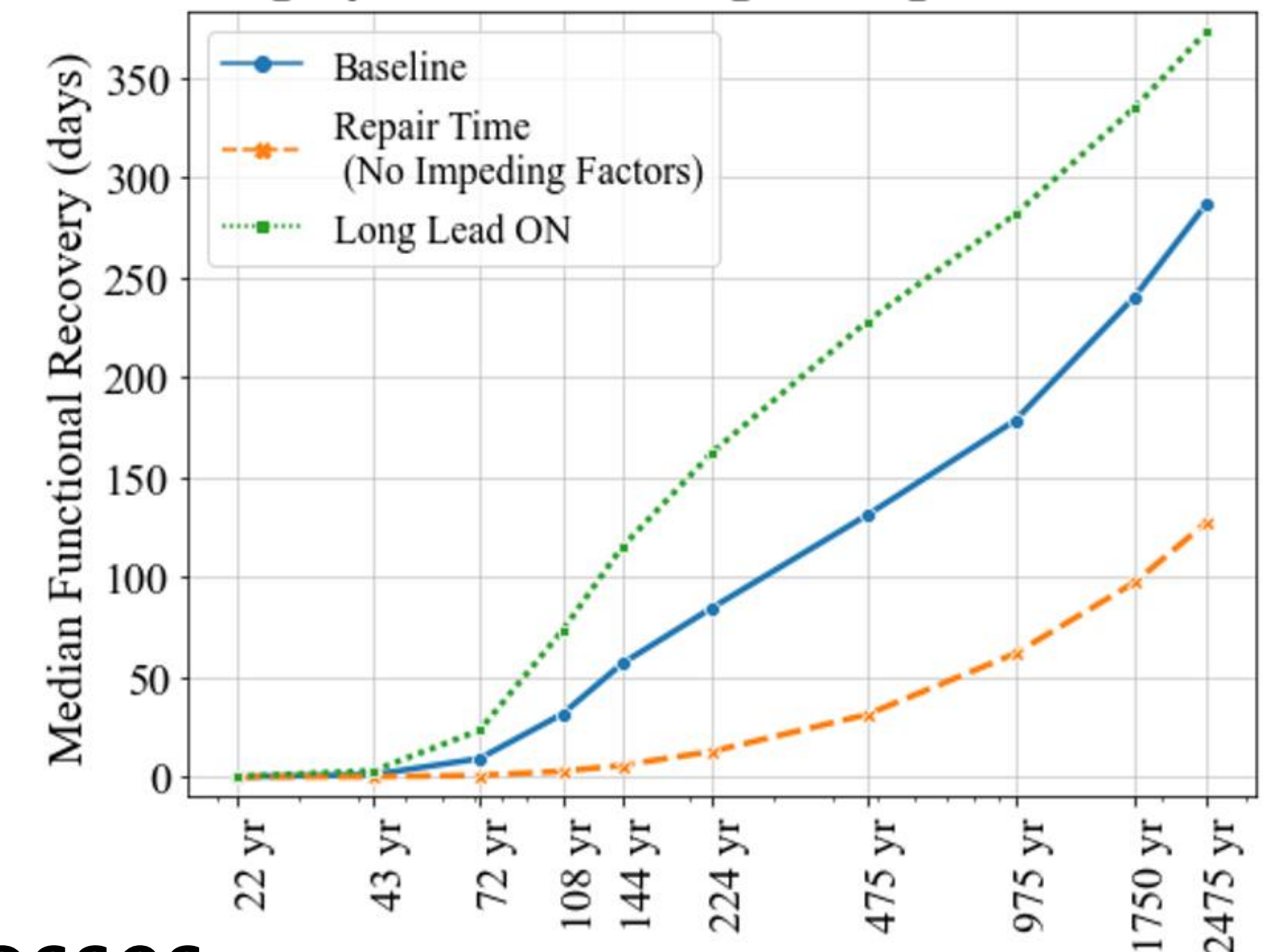
Functional recovery does not mean “Immediate Recovery” performance for all uses, occupancies, or services.

Functional Recovery - Why do we need it?

Functional Recovery - Why do we need it?

- Current codes and standards do not explicitly protect against economic losses nor target performance in terms of return of function for most buildings
 - 20-40% of modern code-conforming buildings projected to be unfit for occupancy or function for months or longer following major earthquake (FEMA P-58 / ATC 138)
 - 15-20% economically unreparable (FEMA P-58)
 - Older buildings perform even worse
- To protect individuals and communities against such losses, a change in codes, standards, construction practices, and societal values is needed (FEMA P-2090 / NIST SP-1254)

Risk Category II New Buildings in High Seismic Sites



Functional Recovery - Why do we need it?

- Why looking for better than Life Safety?
 - Public wants and expects resilient communities
 - Focus on community resilience at all levels of government
 - Natural hazard events cost U.S. \$100B / year on average
 - 150M people in 42 states at risk of a damaging earthquake within next 50 years
- Desire to reduce vulnerability, minimize losses, and improve recovery time of communities
 - Reduce total cost to individuals, businesses, and community
 - Improve access to “essential” services and resources
 - New understanding following pandemic, not just emergency services
 - Avoid significant displacement of households
 - Focus on multi-family housing and vulnerable populations

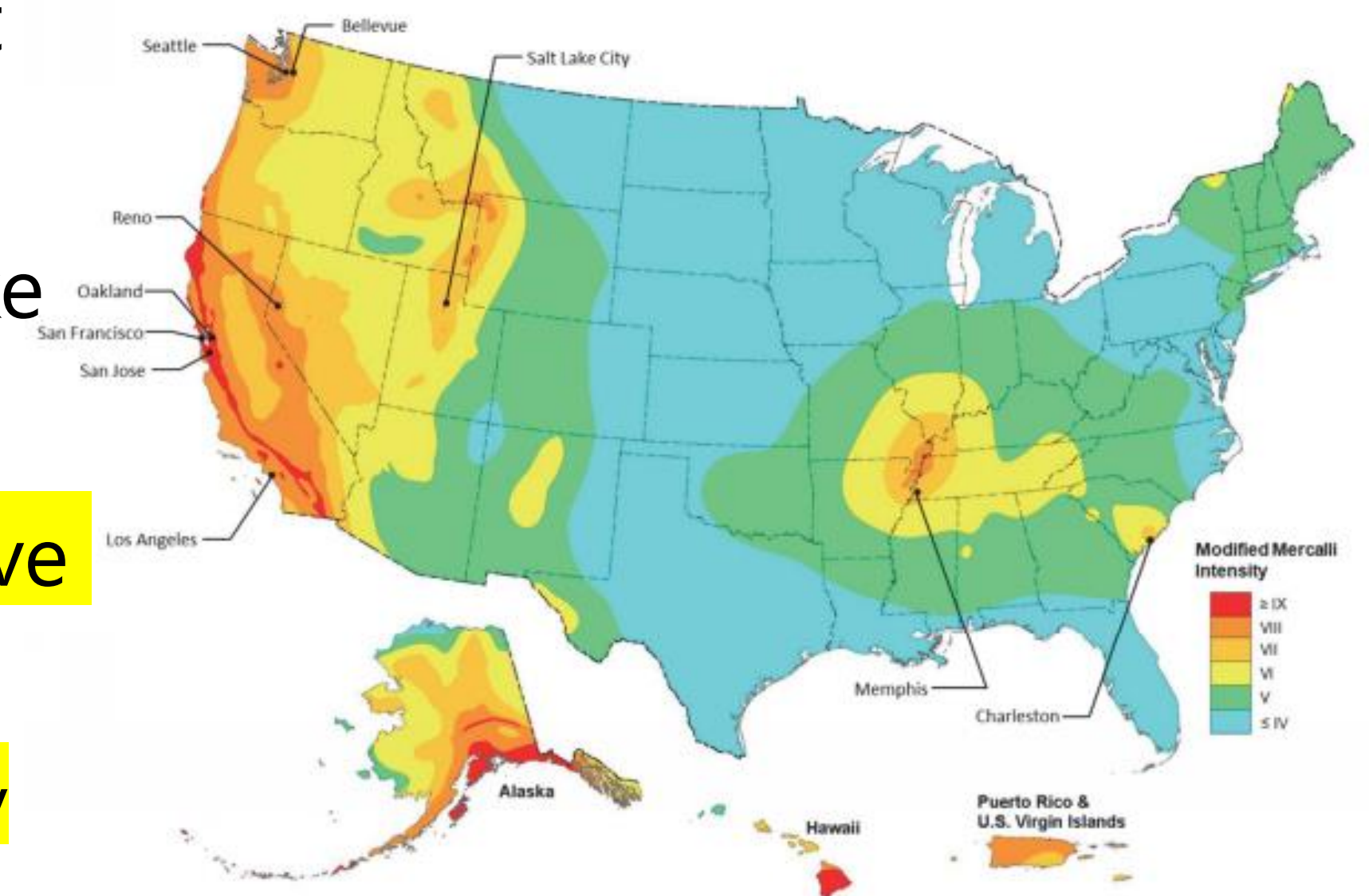
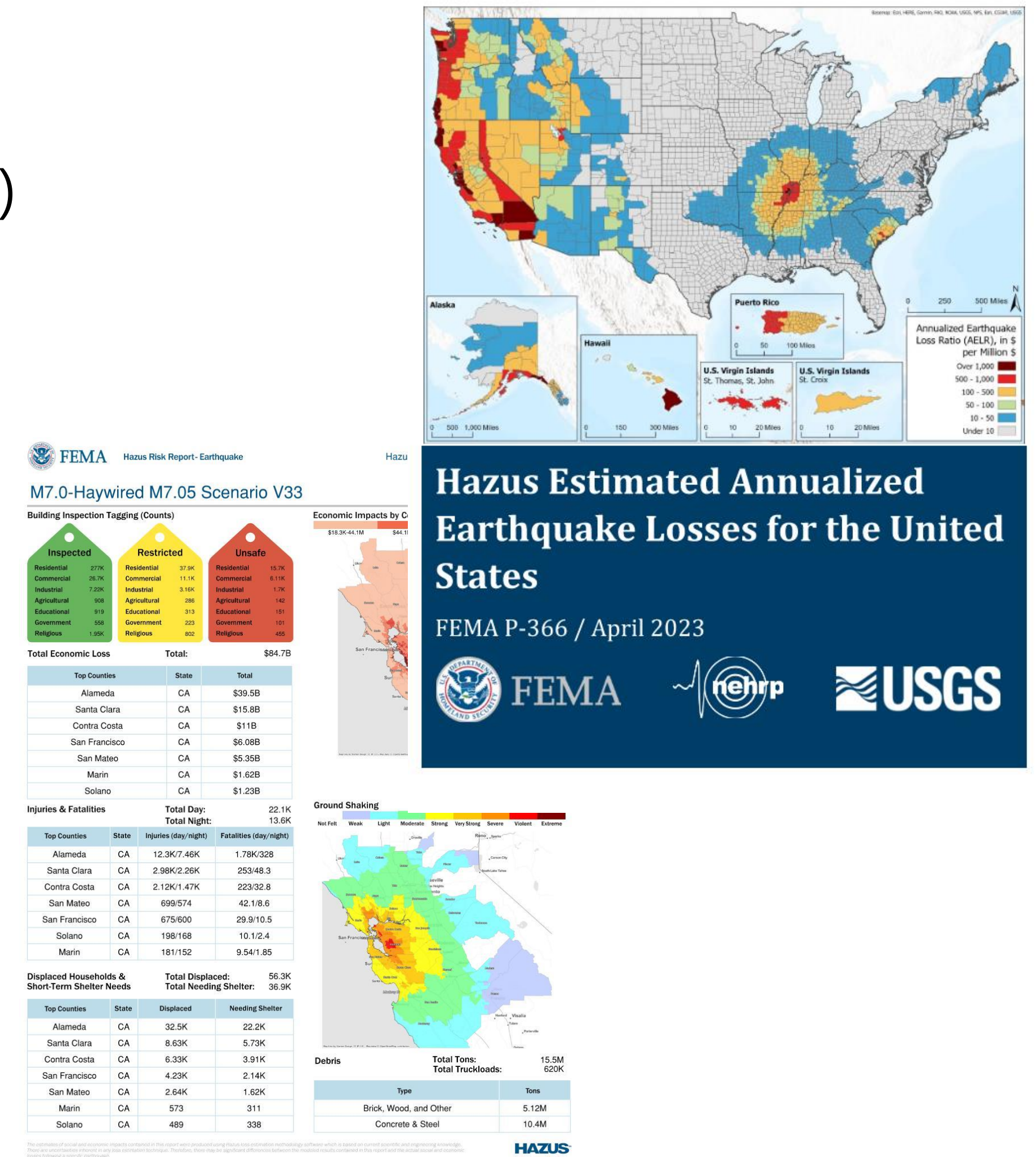


Figure 1-1 Regions of the United States at risk of significant earthquake shaking (courtesy of N. Luco, USGS).

Functional Recovery - Why do we need it?

- Why looking for better than Life Safety?
 - 2023 HAZUS Estimated Annualized Losses (FEMA P-366)
 - Estimated AEL for US = \$14.7B
 - Estimated AEL for California = \$9.6B
 - Total estimated economic exposure = \$107.8T (more than 29% from California)
- Earthquake scenario studies (CA-based):
 - M7.8 Southern San Andreas (ShakeOut) = \$200B
 - 1906 Great SF Earthquake recurrence = \$150B
 - M7.1 HayWired Scenario = \$84B
- Earthquake Losses from Past Notable CA Earthquakes
 - M6.7 Northridge (1994) = ~\$40B
 - M6.9 Loma Prieta (1989) = ~\$20B
 - M6.0 South Napa (2014) = ~\$1B
 - M7.1 Ridgecrest (2019) = ~\$1B



Functional Recovery - How did we get here?

Functional Recovery - How did we get here?

- FEMA P-58: Next Generation Performance-Based Seismic Design Procedures
- 2015 NEHRP Resource Paper (Part 3): New Performance Basis for the Provisions
- **2018 NEHRP Reauthorization**
- 2020 NEHRP Resource Paper (Part 3): Resilience-Based Design and the NEHRP Provisions
- **FEMA P-2090 / NIST SP-1254: FEMA-NIST FR Report to Congress (published 01/2021)**
- ATC-138: Methodology for Assessment of Functional Recovery Time (extension of FEMA P-58)
- **2026 NEHRP Provisions Update Committee (PUC) (formed in 2022)**

Functional Recovery - How did we get here?

Other Relevant Work/Resources:

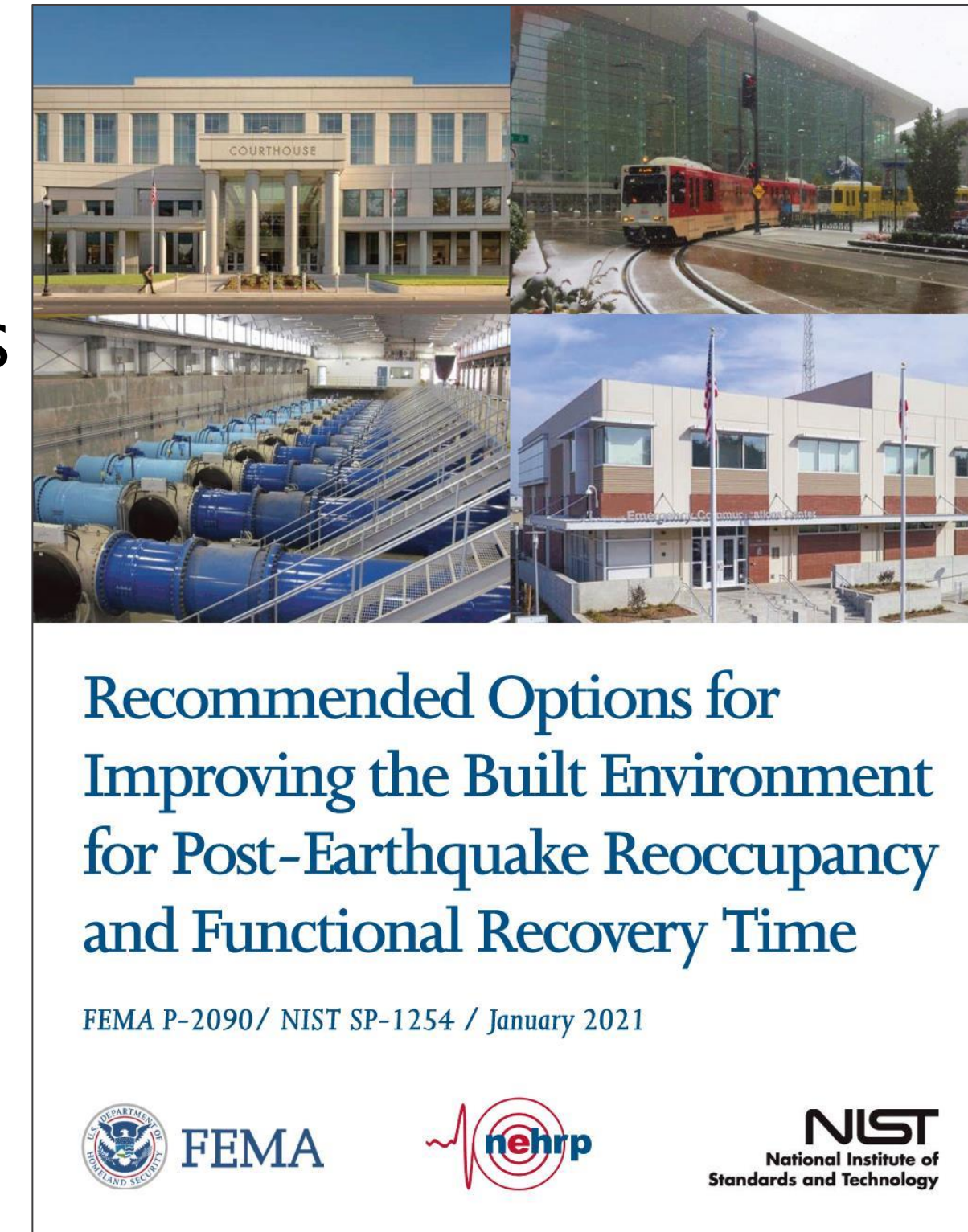
- FEMA P-2191: "A Step Forward"
- FEMA P-2055: "Post-disaster Building Safety Evaluation Guidance"
- NIST Functional Recovery Projects
- NIST Community Resilience Planning Guide
- 2019 EERI Public Policy White Paper
- SEAOC Resilience Committee Paper & Presentation for 2020 SEAOC Convention
- FEMA E-74: Reducing the Risks of Nonstructural Earthquake Damage
- ATC 120 Improved Seismic Performance of Nonstructural Components
- ICC RC IV Code Change Proposals
- ICC Performance Code re-write

Functional Recovery - 2018 NEHRP Reauthorization

- 2018 NEHRP Reauthorization
 - Charged NEHRP Agencies to consider community resilience goals when developing codes and standards for seismic design
 - Charged FEMA and NIST to form a Committee of Experts to provide recommended options to improve built environment for post-earthquake reoccupancy and functional recovery time
 - Resulted in 2021 FEMA NIST "Report to Congress" (FEMA P-2090 / NIST SP-1254)
 - Resulted in FEMA Contract with BSSC to consider functional recovery in 2026 PUC Cycle

Functional Recovery - FEMA-NIST Report

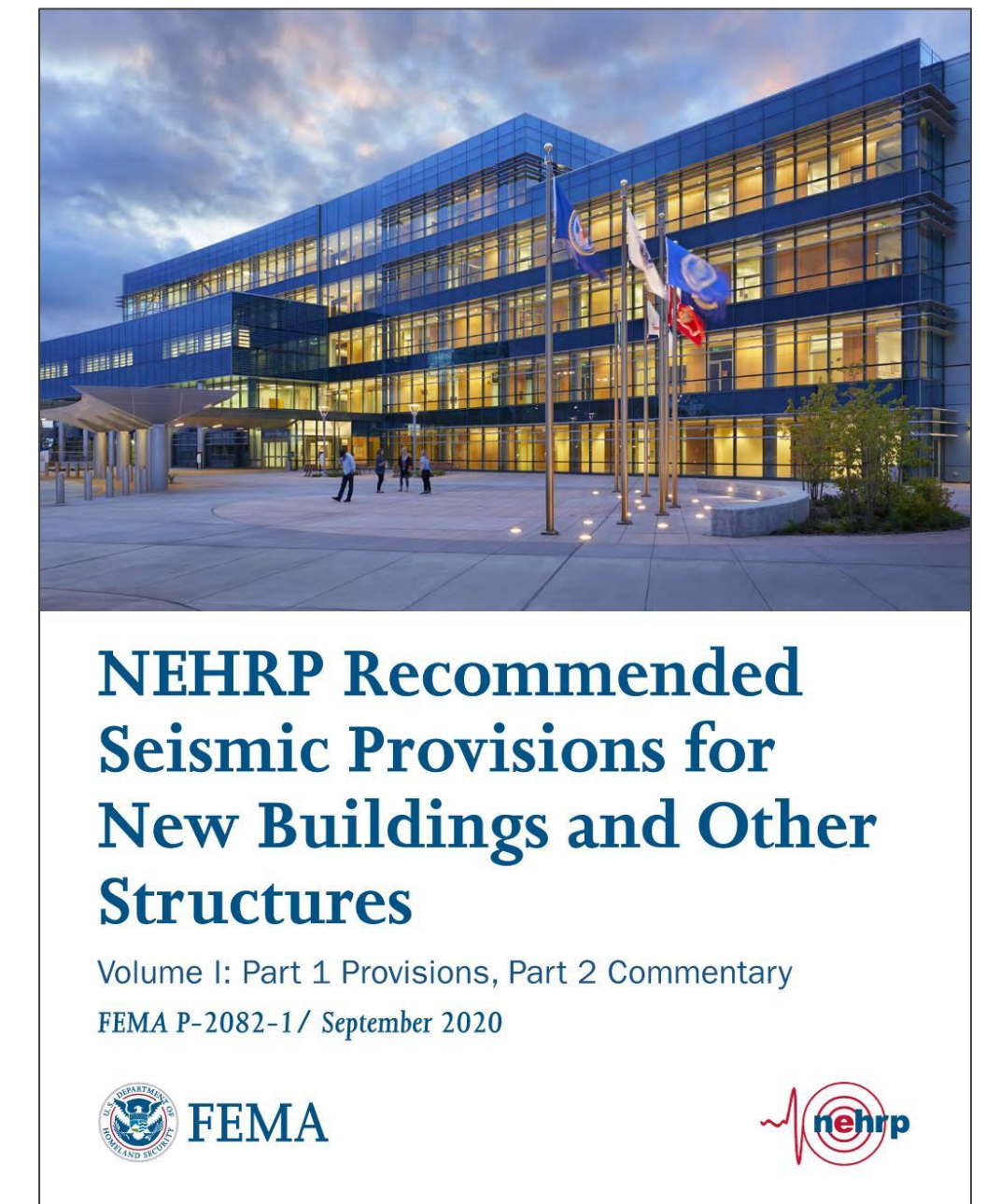
- FEMA P-2090 / NIST SP-1254 "Report to Congress" (2021)
Recommendations:
 - #1: Develop Framework for Post-Earthquake Recovery-Based Objectives
 - #2: Design New Buildings to Meet Recovery-Based Objectives
 - #3: Retrofit Existing Buildings to Meet Recovery-Based Objectives
 - #4: Design, Upgrade, and Maintain Lifeline Infrastructure Systems to Meet Recovery-Based Objectives
 - #5: Develop and Implement Pre-Disaster Recovery Planning Focused on Recovery- Based Objectives
 - #6: Provide Education and Outreach to Enhance Awareness and Understanding of Earthquake Risk and Recovery-Based Objectives
 - #7: Facilitate Access to Financial Resources Needed to Achieve Recovery



https://www.fema.gov/sites/default/files/documents/fema_p-2090_nist_sp-1254_functional-recovery_01-01-2021.pdf

Functional Recovery - FEMA-NIST Report

- FEMA P-2090 / NIST SP-1254 "Report to Congress" (2021)
Recommendations: (relevant to 2026 NEHRP Provisions, PUC/FRTC)
 - **#1: Develop Framework for Post-Earthquake Recovery-Based Objectives**
 - **#2: Design New Buildings to Meet Recovery-Based Objectives**
 - #3: Retrofit Existing Buildings to Meet Recovery-Based Objectives
 - #4: Design, Upgrade, and Maintain Lifeline Infrastructure Systems to Meet Recovery-Based Objectives
 - #5: Develop and Implement Pre-Disaster Recovery Planning Focused on Recovery- Based Objectives
 - #6: Provide Education and Outreach to Enhance Awareness and Understanding of Earthquake Risk and Recovery-Based Objectives
 - #7: Facilitate Access to Financial Resources Needed to Achieve Recovery



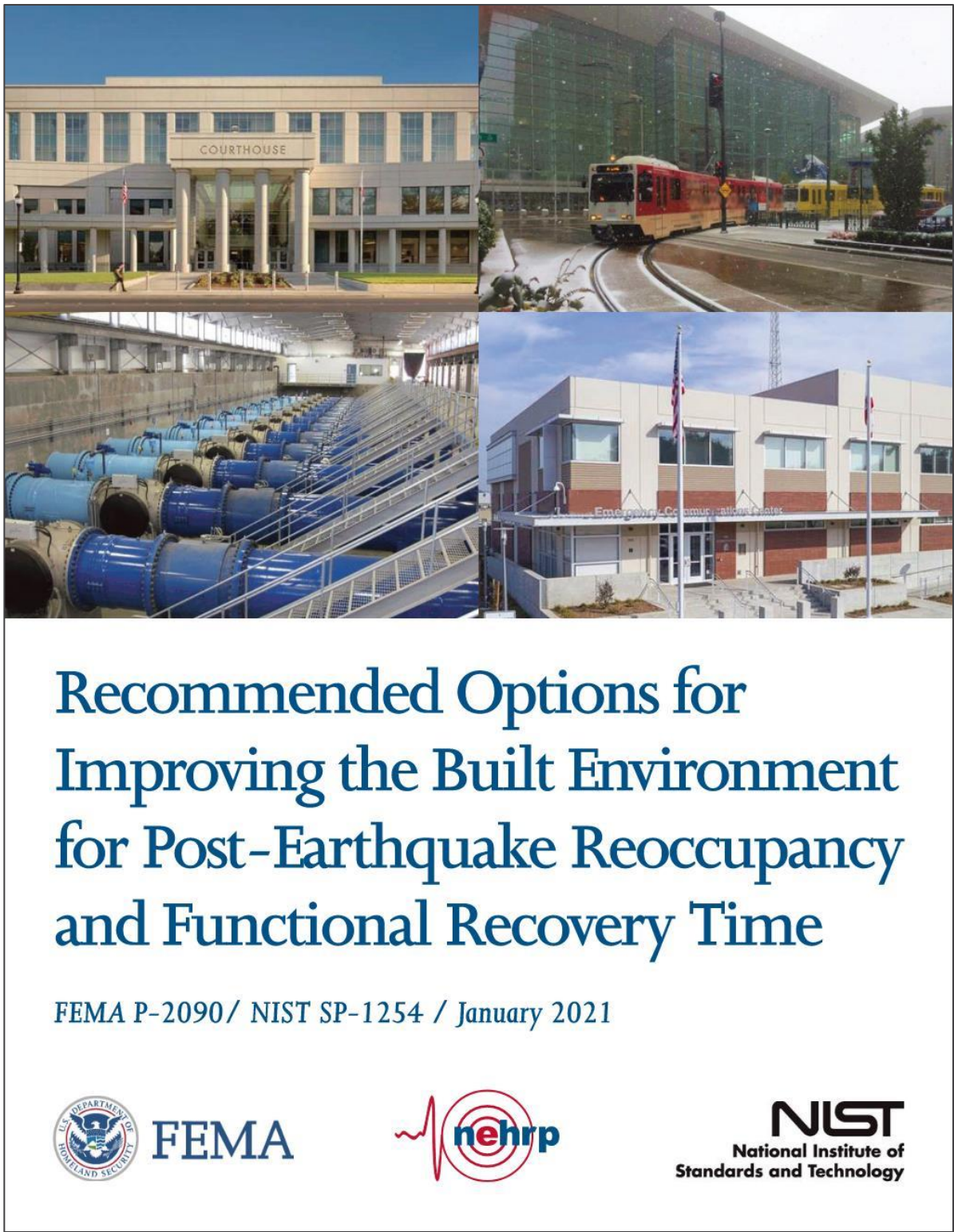
Functional Recovery - FEMA-NIST Report

- FEMA P-2090 / NIST SP-1254 "Report to Congress" (2021)
Recommendations:
 - #1: Develop Framework for Post-Earthquake Recovery-Based Objectives
 - Design criteria; desired recovery times; specified hazard/risk

Table B-1 Conceptual Functional Recovery Categories for a Design Hazard Level

Functional Recovery Category	Target Functional Recovery Time	Recovery Phase and Associated Functions and Services ⁽¹⁾	Examples of Buildings and Lifeline Infrastructure Systems
Functional Recovery Category A (FRC-A)	Hours (or Less)	Near-Term (Nearly Immediate) and Emergency Response – rescue, safety, security, and event stabilization	Emergency and first-responder facilities (e.g., hospitals, fire and police stations), designated shelters, emergency operations centers, and lifeline infrastructure systems supporting emergency response (e.g., power, communication, critical transportation)
Functional Recovery Category B (FRC-B)	Days to Weeks	Short-Term – shelter, governance, daily necessities, and care for vulnerable populations	Single- and multi-family residential, local government, schools, outpatient medical facilities, nursing homes, critical retail (e.g., food distribution, pharmacy, home improvement), and lifeline infrastructure systems supporting short-term activities
Functional Recovery Category C (FRC-C)	Weeks to Months	Intermediate-Term – restoration of neighborhood activities and economic vitality	Critical business enterprises, possibly exceeding a certain size threshold, and lifeline infrastructure system services supporting intermediate-term activities
Functional Recovery Category D (FRC-D)	Months to Years	Long-Term – cultural, quality of life, and leisure activities	Buildings not assigned to other categories, possibly including less critical business enterprises, less-critical retail, entertainment, leisure, and cultural facilities, and lifeline infrastructure system services supporting long-term activities

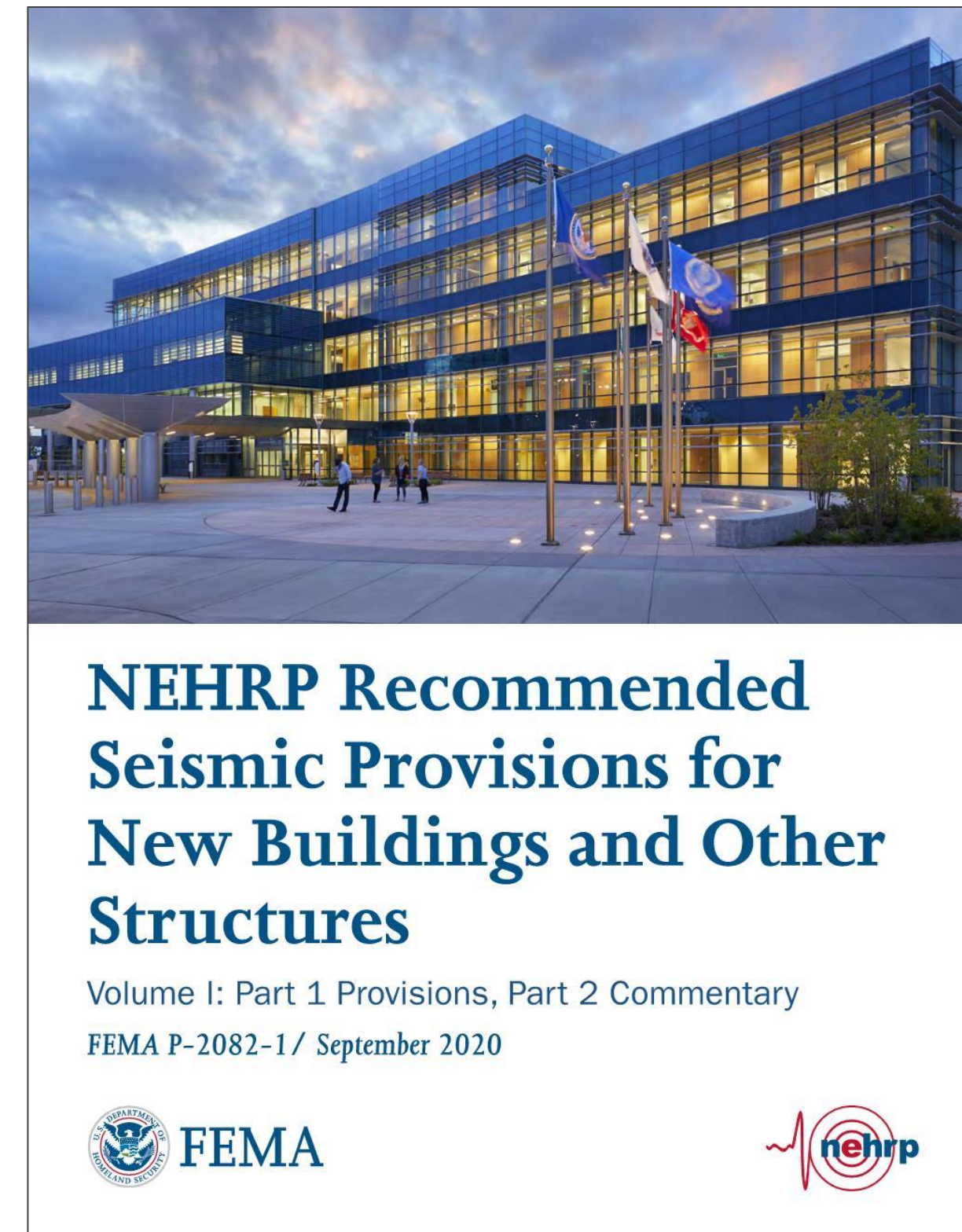
Note 1: Recovery phases refer to the FEMA National Disaster Recovery Framework, Second Edition (FEMA, 2016)



PUC Functional Recovery Task Committee (FR TC)

PUC Functional Recovery Task Committee (FR TC)

- Development of Provisions for Building Code Adoption
2026 NEHRP Recommended Seismic Provisions:
 - Serves as source document for ASCE 7 “Minimum Design Loads and Associated Criteria for Buildings and Other Structures” which is the referenced standard that defines earthquake loads and other design requirements within the International Building Code and California Building Code
 - NEHRP contributes to, but does not control, seismic provisions that get adopted for national “model building code”
 - FEMA/NIST Report to Congress: Jurisdictions should be encouraged to develop their own policies to supplement or enhance the model code



PUC Functional Recovery Task Committee (FR TC)

Scope:

Consider functional recovery relative to design of new buildings and nonbuilding structures and develop appropriate proposals for the 2026 NEHRP Provisions

- Part 1: Provisions & Part 2: Commentary
- Part 3: Resource Paper(s)

Organization:

- Task Committee (TC) – formed in Q3 2022
 - Approximately 25 corresponding members and liaisons
 - TC Chair: Ryan Kersting, TC Vice Chair: Abbie Liel
 - Preceded by FR Planning Committee that met in Q1/Q2 2022 to establish scope for FR TC
 - Five Topic Subcommittees (TS)

PUC Functional Recovery Task Committee (FR TC)

Voting Members:

- Ryan Kersting* (Chair), Buehler
- Abbie Liel* (Vice Chair), Univ. of Colorado
- Bob Pekelnicky* (PUC Liaison), Degenkolb
- Bret Lizundia*, Rutherford+Chekene
- Curt Haselton*, CSU-Chico & HBRG
- Daniel Zepeda, Degenkolb
- David Bonowitz*, private consulting
- Emily Guglielmo*, Martin/Martin
- Greg Soules*, CB&I Storage Solutions
- Jeff Soulages*, Intel
- Jon Heintz*, Applied Technology Council
- Jon Siu, private consulting
- Kevin Moore*, SGH
- Lucy Arendt*, SNC School of Business
- Phil Caldwell, private advising
- Ron Hamburger*, SGH
- Steve Winkel*, Preview Group
- Christina Aronson*, FEMA
- Nico Luco*, USGS
- Siamak Sattar*, NIST

* Indicates member of prior FR Planning Committee

PUC Functional Recovery Task Committee (FR TC)

Corresponding Members:

- Alice Chang-Richards, Univ. of Auckland
- Anna Lang, Zylent
- Bonnie Manley, AISC
- Carlos Molina-Hutt, Univ. of British Columbia
- Charlie Kircher, private consulting
- Don Scott, private consulting
- Dustin Cook, NIST
- Erica Fischer, Oregon St. Univ.
- Gary Ehrlich, NAHB
- Jakub Valigura (TC Secretary), Arup
- Jay Larson, AISI
- Jennifer Goupil, ASCE/SEI
- John Van de Lindt, Colorado St. Univ.
- Jon-Paul Cardin, AISI
- Jonathan Buckalew, Nabih Youssef & Assoc.
- Julie Furr, Smith Seckman Reid
- Karyn Beebe, ICC
- Keith Porter, ICLR
- Kent Yu*, SEFT Consulting
- Laurie Johnson*, private consulting & CEA
- Maha Kenaway, Exponent
- Mike Mahoney, private consulting
- Nathan Gould, ABS Consulting
- Reid Zimmerman, KPFF
- Ron Larsen, GSA
- SK Ghosh, SKGA
- Tamika Bassman, Arup
- Therese (Terri) McAllister*, NIST
- Tommy Sidebottom, ZFA
- Bob Hanson*, FEMA SME
- Mai Tong*, FEMA
- John Hooper*, MKA and PUC Chair
- Jiqui (JQ) Yuan*, NIBS and BSSC Ex. Dir.

* Indicates member of prior FR Planning Committee

PUC Functional Recovery Task Committee (FR TC)

Intended Deliverable:

Part 1/2 – Provisions & Commentary

- New Proposed Chapter for NEHRP Provisions that addresses “Seismic Design Criteria and Other Requirements for Functional Recovery”
 - Key concepts, terms, and definitions, as additions/revisions to ASCE 7
 - Functional Recovery Category table
 - Design criteria & hazard level, as additions/revisions to other applicable sections of ASCE 7
 - Prescriptive recovery-based design parameters deemed to meet desired recovery times
 - Importance factor, system coefficients and factors (R, Cd), drift limits, nonstructural detailing requirements, etc.
 - Potential QA/QC criteria, as additions/revisions to applicable sections of ASCE 7 or IBC
 - Coordination with other provisions, as revisions to ASCE 7 Chapter 1 and/or IBC for RC IV

PUC Functional Recovery Task Committee (FR TC)

Intended Deliverable:

Part 3 – Resources

- Potential revisions to IBC language and/or new Appendix for IBC to address “Seismic Design Criteria and Other Requirements for Functional Recovery”
 - Potential new Functional Recovery Categories and/or revisions to Risk Categories, presented in “alternative” provisions (but written in mandatory code language),
 - Potential revisions to IBC Table 1604.5 “Risk Category of Buildings and Other Structures” and/or addition of New Functional Recovery Category Table
 - Potential revisions to other sections of IBC Chapter 16 and Chapter 17
 - Potential stand-alone appendix that mimics the Part 1/2 concepts
 - Likely written as (or adaptable to) “code change proposal” language

PUC Functional Recovery Task Committee (FR TC)

Topic Subcommittees (TS):

- TS #1: Define key terms and concepts related to Functional Recovery
Chair: Jon Heintz Vice Chair: Jonathan Buckalew
- TS #2: Define Functional Recovery Categories with appropriate range of target time
Chair: Jakub Valigura Vice Chair: Siamak Sattar
- TS #3: Define functional recovery time targets for various occupancies/services
Chair: Anna Lang Vice Chair: Lucy Arendt
- TS #4: Develop prescriptive provisions that meet functional recovery objectives
Chair: Reid Zimmerman Vice Chair: Carlos Molina-Hutt
- TS #5: Develop hazard level(s) applicable for functional recovery objectives
Chair: Dustin Cook Vice Chair: Nico Luco

PUC Functional Recovery TC Progress

Current Status:

- TS #1 – First set of definitions have been balloted
- TS #2 & TS #3 – Progress draft of Functional Recovery Category Table
- TS #4 – Progress toward design provisions & other criteria for Functional Recovery
- TS #5 – Ground motion considerations and risk-targets performance objectives
- **FR TC recently balloted in-progress proposals from each TS**

PUC Functional Recovery TC Progress

Outline/TOC of DRAFT New Chapter:

- 24.1 General/Scope
- 24.2 Definitions
- 24.3 Symbols
- 24.4 Functional Recovery Category
- 24.5 Seismic Ground Motion Values
- 24.6 Geologic and Tsunami Hazards
- 24.7 Structural System
- 24.8 Nonstructural Systems
- 24.9 Analysis and Design Criteria
- 24.10 Drift and Deformation
- 24.11 Seismic Certification for Equipment and Components
- 24.12 Documentation and Review
- 24.13 Quality Assurance
- 24.14 Observation
- 24.15 Functional Recovery Plan
- 24.16 Emergency Systems
- 24.17 Performance-Based Design Procedures

PUC Functional Recovery TC Progress

24.2 Definitions (TS1):

- Functional Recovery & Functional Recovery Time
 - includes effects of impeding factors; excludes effects of external factors
- Impeding Factor
 - delays repair, dependent on damage (factors affecting lead time to start repair)
- External Factor
 - delays recovery but independent of damage (outside system boundary, outside owner control)
- Basic Intended Function
- Recovery State & Recovery Time
- Reoccupancy & Reoccupancy Time
- Full Recovery & Full Recovery Time
- Repair Time

PUC Functional Recovery TC Progress

24.4 Functional Recovery Category (TS2 & TS3):

- Establishing target recovery time for various community services

Immediate/Hours Near/Days Short/Weeks Intermediate/Months Long/Years

- Public Health and Safety
- Telecommunications/Information
- Healthcare
- Transportation Services
- Shelter/Housing
- Energy/Electricity
- Food and Water Resources
- Local Economy/Jobs
- Governance
- Entertainment/Recreation
- Social Support
- Education
- Cultural Identity

PUC Functional Recovery TC Progress

24.4 Functional Recovery Category (TS2 & TS3):

- Mapping of building uses/occupancies to community services
 - Not 1-to-1 correlation...
some groups cover multiple services, not all need same FR time;
some buildings contain multiple occupancy groups
- Group A – Assembly (A-1, A-2, etc.)
- Group B – Business
- Group E – Educational
- Group F – Factory
- Group H – High-Hazard (H-1, H-2, etc.)
- Group I – Institutional (I-1, I-2, etc.)
- Group M – Mercantile
- Group R – Residential (R-1, R-2, etc.)
- Group S – Storage
- Group U – Utility & Miscellaneous
- Public Health and Safety
- Telecommunications/Information
- Healthcare
- Transportation Services
- Shelter/Housing
- Energy/Electricity
- Food and Water Resources
- Local Economy/Jobs
- Governance
- Entertainment/Recreation
- Social Support
- Education
- Cultural Identity

PUC Functional Recovery TC Progress

24.4 Functional Recovery Category (TS2 & TS3):

- Varying degree of specificity and detail depending on location in ASCE 7 vs. IBC
- Working/preliminary draft/example

Functional Recovery Category	Community Function and/or Occupancy of Buildings	Target Recovery Period
A	All Risk Category IV structures in addition to: • Dependent care facilities (I-1A) • ...	Immediate
B	• Multi-unit housing (5+ units) (R-2B) • Grocery (MB) • ...	Near Term
C	• PK-12 Education (E) • ...	Short Term
D	• Hotels (R-1D, R-2D) • ...	Medium Term
E	• Office buildings (BD) • ...	Long Term

PUC Functional Recovery TC Progress

Design Criteria and Other Requirements (TS4)

- 24.9 - Structural system design parameters:
 R/I_e and C_d replaced by R_{fr} and C_{dfr}
- 24.10 - Drift limits:
 Δ_a replaced by Δ_{afr}

Table 24.10-1. Allowable Story Drift, Δ_{afr}	
Functional Recovery Category	Allowable Story Drift, Δ_{afr}
B	$0.005h_{sx}$
C	$0.01h_{sx}$
D	$0.015h_{sx}$
E	$0.02h_{sx}$

Table 24.9-1. Functional Recovery Response Modification Coefficient				
Seismic Force-Resisting System	R_{fr}			
	B	C	D	E
BEARING WALL SYSTEMS				
Special reinforced concrete shear walls	2	2	2	3
Reinforced concrete ductile coupled walls	2	2	2	3
Special reinforced masonry shear walls	2	2	2	3
Light-frame (wood) walls sheathed with wood structural panels rated for shear resistance	1.7	1.7	1.7	2.75

Table 24.9-1. Functional Recovery Response Modification Coefficient				
Seismic Force-Resisting System	R_{fr}			
	B	C	D	E
BUILDING FRAME SYSTEMS				
Steel eccentrically braced frames	1.5	1.5	1.5	5
Steel special concentrically braced frames	1.25	1.25	1.25	2.5
Special reinforced concrete shear walls	2	2	2	3
Reinforced concrete ductile coupled walls	2	2	2	3
Special reinforced masonry shear walls	2	2	2	3
Light-frame (wood) walls sheathed with wood structural panels rated for shear resistance	1.7	1.7	1.7	2.75
Steel buckling-restrained braced frames	2.3	2.3	2.3	4
Steel special plate shear walls	1.5	1.5	1.5	5
MOMENT-RESISTING FRAME SYSTEMS				
Steel special moment frames	3	3	3	3.5
Special reinforced concrete moment frames	3	3	3	4.5
OTHER SYSTEMS				
All other systems	2	2	2	3

- Considering target recovery time based on building use/occupancy AND allowable damage relevant to basic intended function

PUC Functional Recovery TC Progress

Design Criteria and Other Requirements (TS4)

- 24.8 - Nonstructural anchorage and bracing parameters:
 I_p replaced by I_{pfr}
- 24.11 - Nonstructural equipment certification thresholds

Table 24.8-1. Functional Recovery Nonstructural Component Importance Factors by Functional Recovery Category for Earthquake Loads	
Functional Recovery Category	Seismic Functional Recovery Component Importance Factor, I_{pfr}
B	2.0
C	1.75
D	1.5
E	1.25

Table 24.11-1. Seismic Certification Floor Acceleration Threshold

Equipment or Component	Seismic Certification Floor Acceleration Threshold by Functional Recovery Category		
	B	C	D or E
MECHANICAL			
Chillers, including associated evaporators and condensers	0.3	0.35	0.4
Cooling Towers	0.5	0.6	0.7
Compressors	0.45	0.55	0.7
HVAC Fans	0.75	0.9	1.1
Variable/Constant Air Volume Boxes	0.6	0.75	0.9
Air Handling Units	0.35	0.45	0.6
Control Panels	1	1.15	1.45
ELECTRICAL			
Transformers	0.85	1.05	1.35
Motor Control Centers	0.85	1.0	1.2
Low Voltage Switchgear and Switchboards	0.8	0.95	1.15
Distribution Panels	1.0	1.2	1.5
Battery Racks	1.0	1.1	1.3
Battery Chargers	0.65	0.8	1.05
Generators	0.85	0.95	1.15

- Considering target recovery time based on building use/occupancy AND allowable damage relevant to basic intended function

PUC Functional Recovery TC Progress

Design Criteria and Other Requirements (TS4)

- 24.12 - Documentation and Review
- 24.13 - Quality Assurance
- 24.14 - Observation
- 24.15 - Functional recovery plan
- 24.16 - Back-up systems
- 24.17 - Performance-based procedure
- Differentiation between ASCE 7 and IBC content still to be determined

PUC Functional Recovery TC Progress

24.5 Seismic Ground Motion Values (TS5)

- Current Life Safety / Collapse Prevention performance targets:
 - Risk Target: 1% chance of collapse in 50 years
 - +
 - Reliability Target: 10% chance of collapse conditioned on MCER ground motions
- Preliminary Functional Recovery performance targets:
 - Risk Target: 10% chance of exceeding recovery time target (# of hours, days, etc.) in 50 years
 - +
 - Reliability Target: 25% chance of exceeding recovery time target (# of hours, days, etc.) conditioned on FRER ground motions

PUC Functional Recovery TC and TS Next Steps

Work in progress...

- Refinement of structural and nonstructural design criteria
 - Further collaboration with ATC-138 for additional data from archetype studies
 - Benchmarking/updating RCIV design criteria relative to functional recovery
 - Test-bed studies, "example project" design case studies
- Assignment of occupancies/services to functional recovery categories
- Further clarity on basic intended functions and acceptable damage states
- Nonbuilding structures
- Applicability & charging language for mandatory vs voluntary implementation

PUC Functional Recovery TC and TS Next Steps

Proposal Development & Balloting

- Q4/2023 & Q1/2024 – TC Balloting of in-progress drafts, TS work ongoing
- Q2/2024 & Q3/2024 – TC & PUC balloting of 90% drafts
- Q3/2024 & Q4/2024 – TC & PUC balloting of final proposals
- Q1/2025 – PUC FR proposals sent to ASCE (SSC review balloting prior then MC)
 - ASCE 7 committees will review proposals and decide on content for ASCE 7-28
 - ASCE 7-28 → 2030 IBC → 2031 CBC (enforced in 2032)
 - 2026 NEHRP Provisions will be published and could be a resources for organizations or jurisdictions interested in implementing functional recovery provisions
 - Could be used to develop state/local amendments to 2027 IBC as part of 2028 CBC adoption

Additional Resources

- NEHRP PUC Functional Recovery Planning Committee Report
<https://www.nibs.org/reports/functional-recovery-planning-committee-report>
- FEMA-NIST Functional Recovery Report
https://www.fema.gov/sites/default/files/documents/fema_p-2090_nist_sp-1254_functional-recovery_01-01-2021.pdf
- ATC 138-3 Report
<http://femap58.atcouncil.org/documents/fema-p-58/34-atc-138-3-volume-8-methodology-for-assessment-of-functional-recovery-time/file>
- FEMA-ATC Functional Recovery Workshop Report
<https://www.atcouncil.org/doclink/atc-58-7-fr-workshop-report-2022-2/eyJ0eXAiOiJKV1QiLCJhbGciOiJIUzI1NiJ9.eyJzdWUiOiJhdGMtNTgtNy1mci13b3Jrc2hvcC1yZXBvcnQtMjAyMi0yIiwiaWF0IjoxNjc3NjE4NjUwLCJleHAiOiE2Nzc3MDUwNTB9.LqdNzmgp5ySLs0uw4epR6eiQhYLJjK2rRKtJ1sx9OGk>

Questions/Discussion

Contact:

Ryan Kersting, SE

PUC Functional Recovery Task Committee Chair

rkersting@buehlerengineering.com

Ryan Kersting, PUC Functional Recovery Task Committee Chair,
Principal, Buehler Engineering



FEMA



Building Seismic
Safety Council