



**MIT REAP**  
Regional Entrepreneurship  
Acceleration Program

Natural Disaster & Recovery Real Estate White paper

## Rebuild LA as a Scalable National Model for Intelligent Disaster Prevention and Recovery

### Executive Summary

The United States faces a growing crisis driven by climate volatility, aging infrastructure, and fragile housing markets. Natural disasters are striking with increasing frequency and intensity, while the ability of states and local governments to mitigate, respond, and rebuild is diminishing. Insurance companies are withdrawing from high-risk markets, leaving millions of homeowners exposed and compounding a severe housing inventory shortage. The Rebuild LA initiative presents a scalable solution that can serve as a national model. It leverages generative AI, digital twin technology, predictive analytics, and a collaborative ecosystem across public and private sectors to enable intelligent prevention, documentation, and recovery from disasters. This white paper outlines the size of the problem, the failings of current systems, and the robust, tech-enabled approach that Rebuild LA offers.

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### I. National Context: The Escalating Disaster Crisis

Over the past 20 years, the United States has seen a dramatic increase in disaster events, both in frequency and financial toll. According to NOAA, between 2000 and 2010, there were 62 billion-dollar disasters. From 2010 to 2020, that number more than doubled. In the last five years, there has been an annual average of 18 such events, and 2023 alone saw over \$90 billion in damages.

The trend is unmistakable and accelerating:

- **Wildfires** now burn an average of over 7 million acres annually, compared to just 3.3 million in the 1990s.
- **Hurricanes** are intensifying faster due to warmer oceans, with more Category 4 and 5 storms in the past two decades than ever recorded.
- **Flooding** now impacts every region of the country due to inadequate drainage, sea-level rise, and changing precipitation patterns.

#### Key Drivers of Disaster Escalation:

- **Climate Change:** Amplifies storm systems and prolongs droughts and heatwaves.
- **Overdevelopment in High-Risk Zones:** Residential growth in fire-prone hillsides and coastal floodplains increases exposure.
- **Aging Infrastructure:** Power grids, water systems, and roadways are ill-equipped to handle modern climate stressors.

**Top 20 U.S. Metropolitan Areas at Risk:**

1. Los Angeles, CA
2. Miami, FL
3. Houston, TX
4. New Orleans, LA
5. San Francisco, CA
6. New York City, NY
7. Phoenix, AZ
8. Denver, CO
9. Seattle, WA
10. Las Vegas, NV
11. Tampa, FL
12. San Diego, CA
13. Charleston, SC
14. Sacramento, CA
15. Austin, TX
16. Salt Lake City, UT
17. Honolulu, HI
18. Atlanta, GA
19. Nashville, TN
20. Washington D.C.

Each of these metropolitan regions is critical to the nation's housing supply, GDP, and cultural fabric. Disasters in these areas result in cascading economic impacts.

## II. Housing Market Pressures & the Insurance Collapse

The U.S. housing crisis is being worsened by climate and insurance instability. Key facts include:

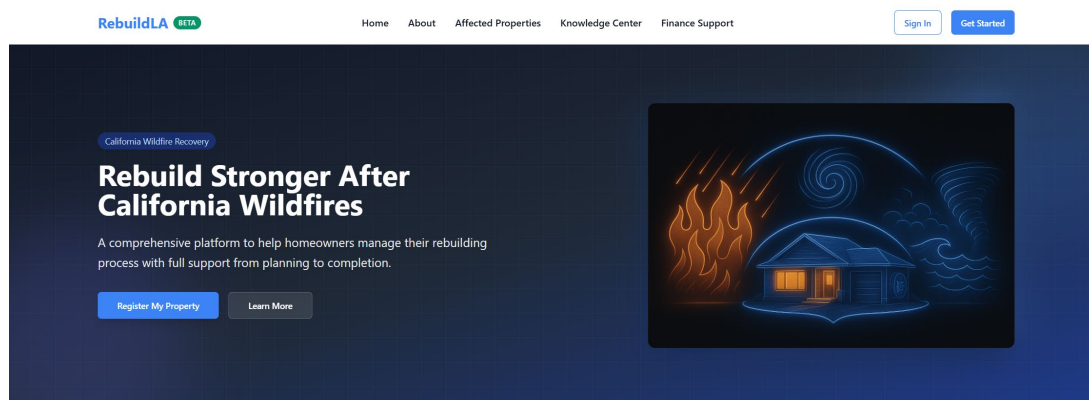
- **5.5 million homes short of demand.**
- **Price increases of 30–60% in many urban markets since 2020.**
- **Insurance exits** from high-risk markets, with over 70% of California's insurers declining to write new fire policies.

### Insurance Crisis Breakdown:

- **Florida:** Over 12 insurers have gone bankrupt or left the state; Citizens Property Insurance Corporation, the state-run insurer of last resort, now carries over 1.3 million policies.
- **California:** Leading carriers like State Farm and Allstate have paused issuing new homeowners policies due to wildfire exposure.
- **Colorado, Louisiana, and Texas** face similar exits, forcing premiums up and pushing families to risk being uninsured.

This directly impacts housing stability:

- Mortgage lenders require insurance; no insurance, no loan.
- Homes become uninsurable and unsellable, depressing local real estate values.
- Local tax bases shrink, weakening municipal capacity to invest in resilience.



### III. Rebuild LA: A Blueprint for National Resilience

Rebuild LA emerged in response to devastating wildfires, but the model is designed for replication across the U.S. It provides a structured, AI-enhanced process for:

#### 1. Preparedness

- Comprehensive **home scans** to create digital twins before disaster strikes.
- AI-generated **risk reports** for each property based on terrain, vegetation, historical disaster data, and structural integrity.
- Customized **emergency readiness guides** using natural language prompts.

#### 2. Documentation & Response

- AI-coordinated **drone flyovers** to validate losses within hours, not weeks.
- Smart, **automated claims filing** tools linked to major insurance carriers.
- Integration with FEMA and local response agencies for triage and aid delivery.

#### 3. Recovery & Rebuilding

- AI-generated **rebuild templates** that conform to local code and optimize for resilience.
- Material **partner kits** that lower costs through bulk pricing and donations.
- Streamlined permitting with **pre-vetted design templates** in city/county systems.

**RebuildLA** BETA

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### Affected Properties

Browse properties affected by wildfires across California. You can claim your property or offer support to others.

**Filters**

Search  
Q. Address, City, or Zipcode

Disaster Zone  
All Disaster Zones

ZIP Code  
All ZIP Codes

Damage Level  
All Damage Levels

Property Status  
All Statuses

Fire Event  
☒ Authentic 
 ☐ Eaton-Altadena 
 ☐ Pacific

Reset Filters

**All Areas** Eaton-Altadena Fire Pacific Palisades Fire

**Eaton-Altadena Fire**

The Eaton-Altadena wildfire affected properties in Altadena, Pasadena, Arcadia, Duarte, La Cañada Flintridge, Monrovia, Montrose, Sierra Madre, San Marino, Glendale, La Crescenta, Baldwin Park, El Monte, San Gabriel, and Temple City.

Affected Date  
**January 2025**

Properties Affected  
**5000**

ZIP Codes  
91001, 91006, 91007, 91008, 91010, 91011, 91016, 91020, 91023, 91024, 91101, 91103, 91104, 91105, 91106, 91107, 91108, 91206, 91208, 91214, 91706, 91731, 91775, 91780

[View Properties](#)

**Pacific Palisades Fire**

The Pacific Palisades wildfire affected properties in Pacific Palisades, West Los Angeles, Brentwood, Bel Air, Malibu, Topanga, Glendale, Agoura Hills, West Hills, Encino, Reseda, Woodland Hills, Tarzana, Sherman Oaks, and Van Nuys.

Affected Date  
**January 2025**

Properties Affected  
**7000**

ZIP Codes

**RebuildLA** BETA

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## Affected Properties

Browse properties affected by wildfires across California. You can claim your property or offer support to others.

**Filters**

Search

Address, City, or Zipcode

Disaster Zone

Eaton-Altadena Fire

ZIP Code

All ZIP Codes

Damage Level

All Damage Levels

Property Status

All Statuses

Fire Event

☐ Authentic ☒ Eaton-Altadena ☐ Pacific

Reset Filters

All Areas **Eaton-Altadena Fire** Pacific Palisades Fire

**Eaton-Altadena Fire**

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Affected Date  
**January 2025**

Counties  
**Los Angeles**

ZIP Codes  
91001, 91006, 91007, 91008, 91010, 91011, 91016, 91020, 91023, 91024, 91101, 91103, 91104, 91105, 91106, 91107, 91108, 91206, 91208, 91214, 91706, 91731, 91775, 91780

Properties Affected  
**5000**

5476 Properties Found Debug - Sources: Pacific(0), Altadena(0), Authentic(0)

Page 1 of 110

**Affected**

Destroyed (~50%)

2681 LINCOLN AVE ALTADENA 91001  
ALTADENA, CA 91001  
18 bed 27 bath 16,037 sq ft

**Affected**

Major (25-50%)

3705 N GIDDINGS RANCH RD ALTADENA ...  
ALTADENA CA, CA 91001  
5 bed 5 bath 3,311 sq ft

**Affected**

Moderate (10-25%)

3205 GLENROSE AVE ALTADENA CA 91001  
ALTADENA CA, CA 91001  
00 19,519 sq ft

**RebuildLA** BETA

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## At-Risk Properties

Explore areas with high risk of natural disasters across the United States, based on FEMA's National Risk Index data. Identify potential hazards before they impact your property.

**Risk Filters**

Search locations

Hazard Type

Wildfire

Risk Level

Select risk level

State

Select state

Clear Filters

**FEMA Risk Data**  
This data is sourced from FEMA's National Risk Index to help identify areas that may be vulnerable to natural hazards.

58 areas found  
Use filters above to narrow your search

**Areas at Risk: Wildfire**

**FEMA State Risk Rankings**  
National Risk Index data from FEMA showing states from highest to lowest risk.

Search states...

|                 |           |       |
|-----------------|-----------|-------|
| California (CA) | Very High | 100.0 |
| Florida (FL)    | Very High | 98.2  |
| Louisiana (LA)  | Very High | 92.9  |
| Texas (TX)      | Very High | 87.5  |
| Illinois (IL)   | Very High | 85.7  |

Map View List View **State Risk Rankings**

**California** Very High Risk **Risk Score 100.0**

FEMA National Risk Index Data

|            |            |                |         |             |          |
|------------|------------|----------------|---------|-------------|----------|
| Population | 39,501,350 | Building Value | \$6.90T | Annual Loss | \$16.33B |
|------------|------------|----------------|---------|-------------|----------|

**Primary Hazards**

Earthquake Wildfire Landslide Drought Flooding

**Risk Analysis**  
California ranks 1 out of 50 in overall risk according to the FEMA National Risk Index. With a risk score of 100.0, the state faces significant hazards from Earthquake, Wildfire, Landslide.  
The estimated annual loss from natural hazards is \$16.33 billion, affecting a population of 39,501,350 and building stock valued at \$6.90 trillion.

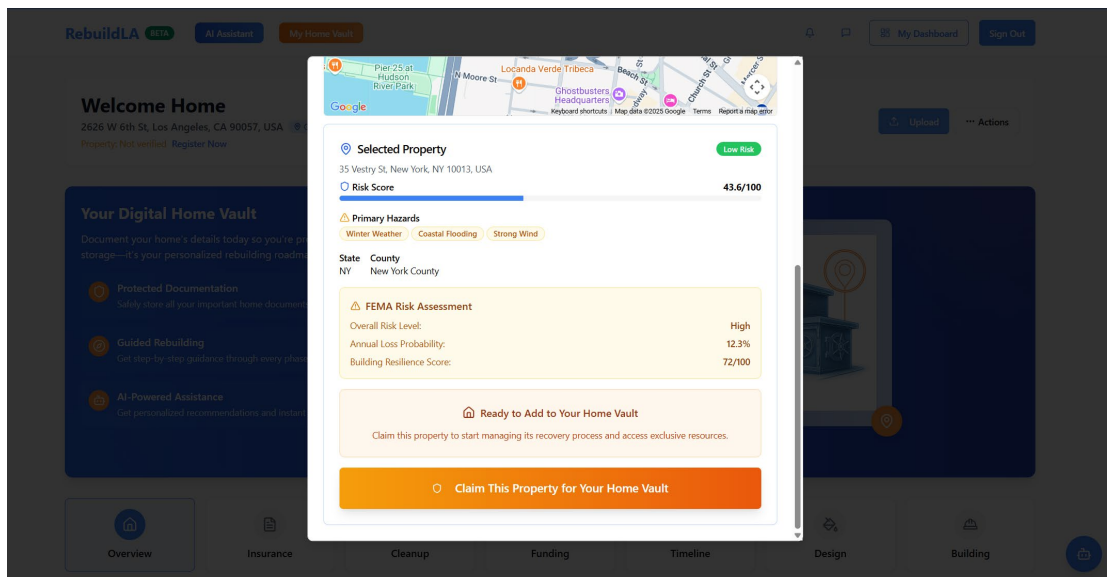
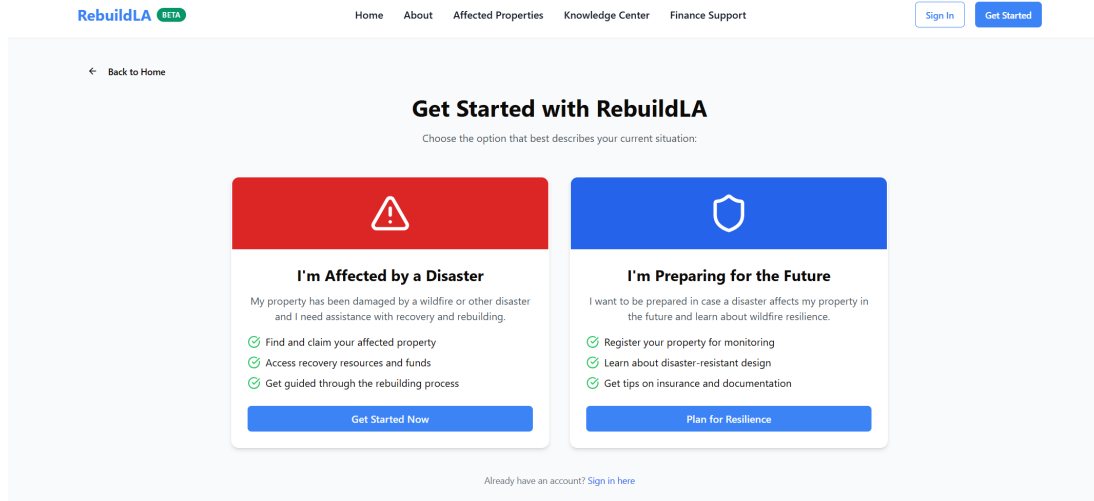
[View Detailed State Risk Profile](#)

## IV. Generative AI, Digital Twins & Predictive Intelligence

Rebuild LA incorporates an integrated tech stack to de-risk and accelerate each stage:

- **Digital Twins:** Virtual representations of homes and communities that store property details, renovation history, damage potential, and live sensor data.
- **Generative AI:** Uses architectural logic and local zoning rules to generate customized rebuilding plans that meet safety, budget, and timeline constraints.

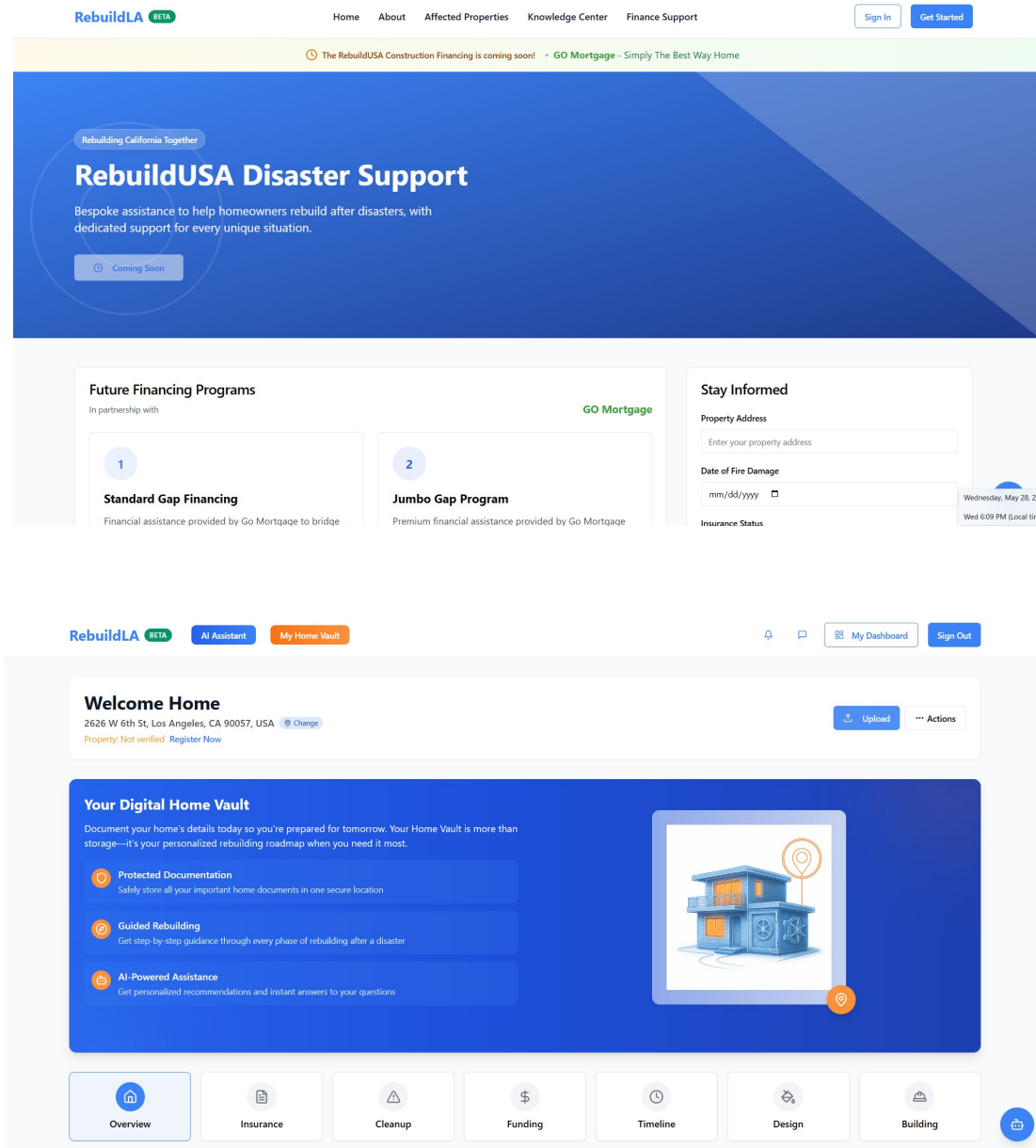
- **Predictive Weather Analytics:** Partnered with top forecasters to deliver 72-hour precision alerts and preemptive deployment of response assets.
- **Resilience Indexing:** AI calculates a "resilience score" for each home to benchmark improvements and insurance qualification.



## V. Bridging the Financial Gap: The Disaster Rebuild Gap Fund

Homeowners often face a 20–40% shortfall between insurance payouts and actual rebuilding costs. The **Disaster Rebuild Gap Fund** will:

- Pool public, private, philanthropic, and municipal capital.
- Provide rapid-disbursement microloans and equity-based advances.
- Spread risk across regions to ensure actuarial stability.
- Partner with banks and lenders to offer interest-free or low-interest repayment options.



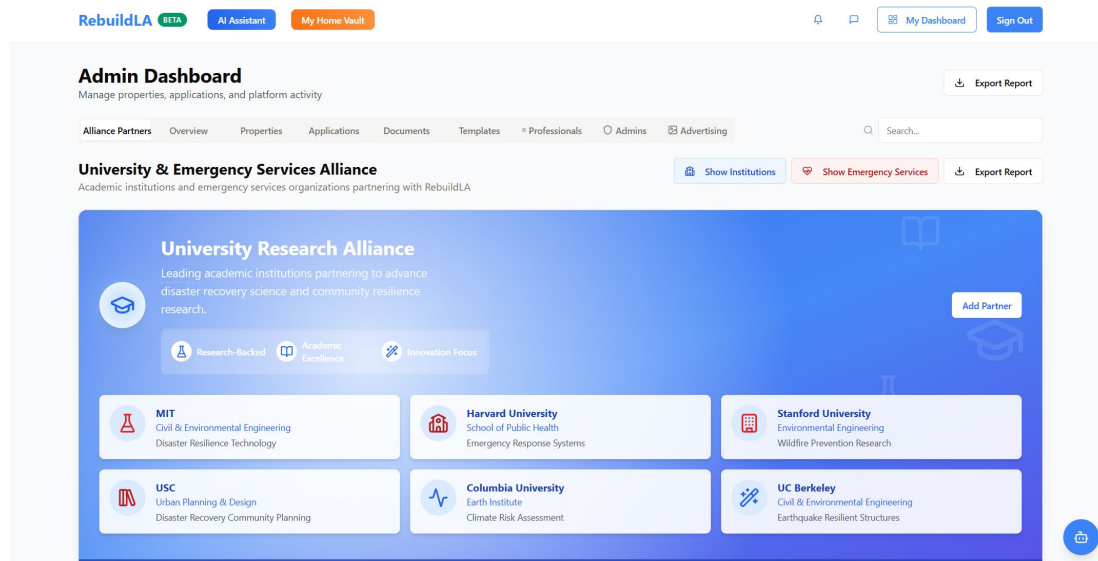


## VI. Governance Framework: Localized but Nationally Coordinated

Rebuild LA advocates for a three-tiered system:

- **Local Level:** Pre-approved playbooks by county, with designated response coordinators and permit streamlining offices.
- **Regional Level:** Collaborative infrastructure across fire zones, flood plains, and seismic belts.
- **National Level:** A centralized portal for data collection, federal compliance, model policy templates, and funding distribution.

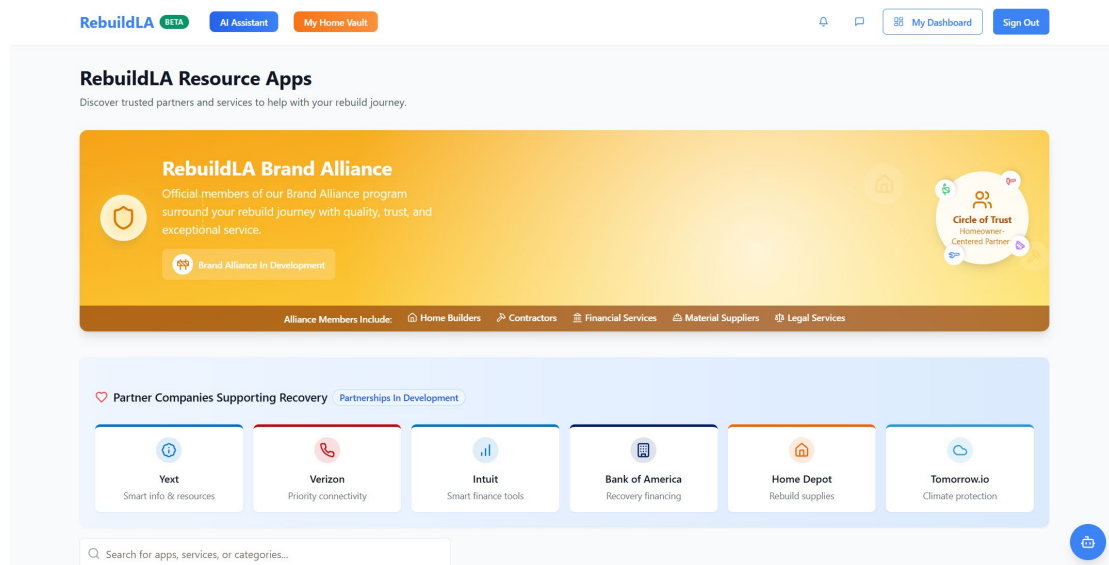
All tiers would operate using shared data formats and secure AI platforms to ensure clarity, speed, and accountability.



## VII. The Rebuild LA Task Force: A Coalition of Cross-Sector Leaders

Rebuild LA will assemble a strategic national team:

1. **Mortgage and Finance Executive** – Underwriting innovation and loan access.
2. **Real Estate Developer** – Permit navigation and regional material planning.
3. **Technology Officer** – Overseeing generative AI and data integration.
4. **Architect/Planner** – Code-optimized and energy-efficient design leadership.
5. **Private Equity Partner** – Capital deployment at speed and scale.
6. **FEMA Expert** – Policy synchronization and disaster relief alignment.
7. **HUD Representative** – Equitable housing integration and funding pathways.
8. **Institutional Academic** – Long-term outcome tracking and publication.
9. **Brand Liaison** – Coordinating donations and supply chain efficiencies.
10. **City Government Representative** – Local planning and zoning buy-in.
11. **Smart Infrastructure Strategist** – Embedding next-gen resiliency.
12. **Innovation Fellow** – Future-forward experimentation and pilot oversight.



## VIII. Conclusion: A New Protocol for National Resilience

The climate crisis is no longer a prediction—it is a reality. Each new wildfire, flood, or hurricane worsens a housing market already under stress. The United States cannot afford to respond with outdated tools and fragmented coordination. Rebuild LA offers a modern, technology-first framework that can:

- Prevent systemic housing collapse.
- Support insurers and lenders with trusted data.
- Reduce human and economic loss.
- Empower communities to build smarter—not just back.

By transforming how we prepare, respond, and rebuild, we not only protect homes—we protect the future. Rebuild LA is ready to scale. The next chapter in national resilience starts now.

