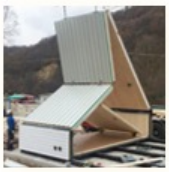
Disaster Recovery Alternative Housing Study

The goal of the Texas General Land Office's Disaster Recovery Alternative Housing Study is to find fast-to-build, resilient housing alternatives to reduce the time disaster survivors, especially low-to-moderate income Texans, are displaced.

Partners Improving Future Disaster Housing Missions

The Disaster Recovery Alternative Housing Study is a two-phase partnership between the Texas General Land Office (GLO) and Texas A&M Engineering Experiment Station (TEES) that focuses on finding post-disaster housing solutions that are affordable, safe, and faster to build than traditionally constructed houses.

Alternative Housing Technologies and Building Systems

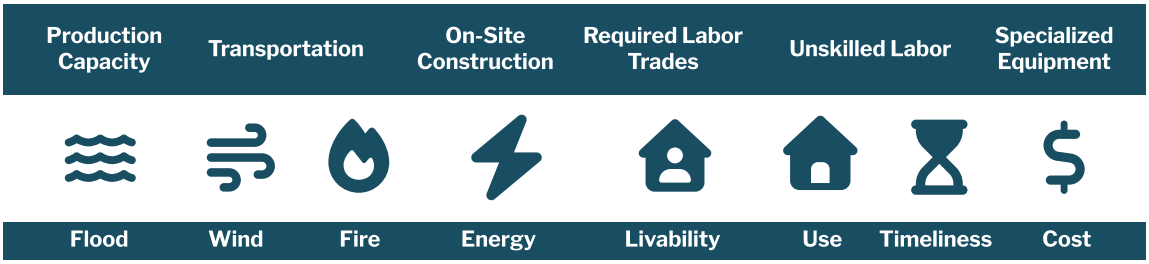
3-D Printed Housing	Modular Foldable	Modular Panelized	Prefabricated	Shipping Containers	Kit Homes
					
					
Uses 3D printer to lay out home structures using a specialized concrete material.	Built from SIPs that are connected in a prefabricated shell and "unfold" on site.	Built from SIPs that connect on site in different configurations.	Units almost entirely constructed in a factory using resilient materials (e.g., structural steel).	Built using shipping containers as the base structure and can be stacked.	Materials are packaged in sets or via corporate partners (e.g., Lowes) for on-site assembly.

Testing for a More Resilient Future

The project will identify viable, market-ready post-disaster housing solutions and evaluate innovative, energy-efficient building materials. The results from laboratory and field testing will provide the State of Texas with data-driven solutions for disaster-resilient housing.

Phase 1: The alternative housing team evaluated market-ready alternative housing technologies submitted by vendors. The selection process involved reviewing literature, consulting with experts, and surveying vendors and architects. Potential technologies and building systems were assessed based on their production capacity, transportation capabilities, and on-site construction requirements.

The study team assessed alternative building materials and housing units across various metrics such as resilience to flood, wind, and fire, energy efficiency, accessibility, cost, and speed and complexity to build.



Phase 2: The team is in the process of building full-scale alternative housing units to test their constructability, as well as small-scale units for lab testing. The small-scale units will be tested for resilience against wind and water infiltration at the Structural and Materials Testing Laboratory (SMLT) at Texas A&M University's RELLIS Campus.

The full-scale units will be evaluated during their manufacturing and construction to identify any logistical challenges. Once built, they'll be tested for passive survivability and energy efficiency by simulating events like power outages. Additionally, their indoor air quality, safety, and livability will be assessed.

Why it Matters

Texas is one of the **most disaster-impacted states.** Frequent and severe natural disasters displace Texans, who often rely on federal programs to provide temporary and long-term housing solutions. No single housing solution works for every community in Texas due to the differences in cities and rural communities, single-family and multi-family housing, and temporary versus permanent housing needs.

After Hurricane Harvey, the Federal Emergency Management Agency (FEMA) asked the State of Texas to partner in a large-scale direct housing mission. Governor Greg Abbott tapped the Texas GLO with this historic mission. It was the first time a state agency had been tasked with administering short-term housing resources on behalf of FEMA.

Having administered both temporary and long-term housing missions, the GLO has seen households move through the entire disaster recovery housing process. This process has highlighted the need for sustainable temporary housing solutions with the goal of transitioning into resilient and affordable permanent housing.

Delivering Results

Building science is rapidly advancing, and new technologies can help expedite the post-disaster housing recovery. The current process of buying, storing, moving, installing, repairing, and removing temporary housing after disasters is expensive, time-consuming, and slow. After a disaster, local, state, and federal leaders need better options for housing displaced disaster victims.

The results of the Disaster Recovery Alternative Housing Study will support the Texas GLO's commitment to assisting communities post-disaster and build resilience against future events. The findings will help federal and state leaders improve the response and recovery process for disaster-impacted communities.