

UTAHNS' VISION FOR 2050

DISASTER RESILIENCE



**Envision
Utah**

*Your Utah,
Your Future*



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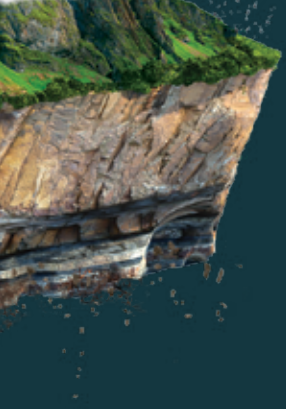
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UTAHNS' VISION FOR 2050

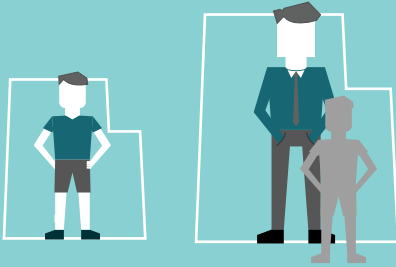
DISASTER RESILIENCE



YOUR UTAH, YOUR FUTURE

PROCESS

UTAH IS GROWING.



TODAY

There are three million people living in Utah.

2050

By 2050 there will be 5.4 million—the population will nearly double in 35 years!

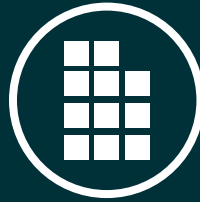
THAT MEANS

2 x the

HOMES JOBS SKIERS
CARS STUDENTS FOOD

OUR GOAL

HELP UTAHNS CREATE A VISION FOR UTAH'S FUTURE



11 TOPICS

Utahns' values guided the selection of 11 topics critical to the future of Utah.



UTAHNS' VALUES

Values studies told us not just what Utahns care about, but why they care about those things.



ACTION TEAMS

Experts from across the state studied the topics and helped shape potential scenarios for the future.

SCENARIOS



8 ACTION TEAMS

OF 400 EXPERTS WORKED FOR 18 MONTHS TO DEVELOP POTENTIAL SCENARIOS FOR UTAH'S GROWTH ACROSS EACH TOPIC.

YOUR UTAH, YOUR FUTURE SURVEY



53,000 UTAHNS

WEIGHED IN ON EACH TOPIC AND EACH SCENARIO, TELLING US WHAT THEY WANT UTAH TO LOOK LIKE IN 2050.

VISION FOR 2050



A COMBINATION

OF SURVEY RESULTS, VALUES, AND ACTION TEAM INPUT FORMED A VISION FOR UTAH'S FUTURE.

Disaster resilience is the ability to survive, adapt, and eventually thrive after a disaster of any type or severity.

INTRODUCTION

UTAH HAS A HIGH RISK OF A MAJOR DISASTER DISRUPTING THE STATE'S ECONOMY AND IMPACTING THE LIVES OF MILLIONS. The state has a one-in-four chance of experiencing a major earthquake in the coming decades. The risk of fire, flooding, and other disasters is also significant and may be increasing. When major natural disasters have occurred, many places in the world and in the U.S. have taken years, even decades, to recover—if they recover at all. A place that is resilient to disasters is able to survive, adapt, and eventually thrive, no matter the catastrophe it experiences. It can quickly recover from disastrous events without disrupting long-term economic health and residents' quality of life.

Almost more than anywhere else in the U.S., many Utahns have focused on preparing to survive in the hours and days immediately following a disaster. Making Utah disaster resilient, however, requires much more. It involves improving our homes, buildings, and infrastructure to reduce the impact of a disaster, so fewer people are killed or injured, more homes and buildings survive, infrastructure and utilities can be quickly restored, and the economy is not so disrupted as to permanently damage Utah's future.

UTAHNS WANT TO SUBSTANTIALLY IMPROVE THE STATE'S DISASTER RESILIENCE, so they can feel safe, have less stress, and reduce the likelihood that they or their children will have to move away from Utah if a disaster occurs and the economy suffers. They also want to be able to recover quickly and return to their normal lives.

YOUR UTAH, YOUR FUTURE

VISION FOR DISASTER RESILIENCE



THE VISION

Utahns envision a future where they have peace of mind, security, and confidence about facing possible disasters. They envision being prepared as individuals, families, and communities so that in the event of a catastrophe, they will be able to remain in Utah, return to their normal lives quickly, and continue to support their families, regardless of the type or severity of the disaster.



GOALS

- 1** Reduce the number of people who would be killed, injured, or displaced in a disaster.
- 2** Reduce how much disruption and damage a disaster would cause and the time needed to recover (including time to restore utilities, rebuild structures, reopen businesses, etc.).
- 3** Reduce the number of people who lose their jobs, can't support themselves and their families, and have to leave Utah.
- 4** Protect those most at risk during a disaster.

KEY STRATEGIES

- 1** Retrofit unreinforced masonry homes and buildings to protect life and prevent injuries in an earthquake.
- 2** Construct new buildings with greater earthquake resilience so more families can stay in their homes and fewer companies are forced out of their places of business after an earthquake.
- 3** Harden existing and future infrastructure to prevent long-term disruptions.
- 4** House vulnerable populations (schools, hospitals, nursing homes, etc.) away from disaster-prone areas; retrofit and design these buildings for resiliency.
- 5** Improve stormwater systems, homes, and communities to handle larger storms.
- 6** Locate new development away from fault lines, floodplains, liquefaction areas, and fire-prone areas.
- 7** Minimize the number of houses and structures that are at risk for wildfire damage, and improve the fire resistance of those that are.
- 8** Constantly improve disaster response and recovery systems.

For more details on these and other strategies, please refer to the recommended strategies section beginning on p. 35.

BACKGROUND:

WHERE WE ARE TODAY



DISASTER RESILIENCE REQUIRES LOOKING BEYOND SHORT-TERM PREPAREDNESS.

Disaster-resilient communities can withstand and quickly recover from catastrophic events without experiencing long-term disruptions to the economy or way of life. Disaster resilience requires looking beyond short-term preparedness (having 72-hour kits, two-week water supply, etc.); Utah needs to implement long-term strategies to lessen the impact of disasters on Utahns' lives and homes and the state's businesses, infrastructure, and economy.

The historical reality is that some places never truly recover from natural disasters. After catastrophes occur, urban areas can experience such devastating damage that the costs of repairs are prohibitive or take many years.

By the time infrastructure and buildings are rebuilt, jobs, businesses, and residents may already be gone for good.

However, actions taken now to improve disaster resilience will ensure that future generations are better able to withstand a disaster in Utah.

TOP RISKS TO THE STATE

EARTHQUAKES

A large portion of Utah's population lives near fault lines and on liquefaction areas, where soil can become like quicksand in an earthquake. A powerful 7.0 earthquake is estimated to occur roughly once every 300 years along the Wasatch Fault, and the last earthquake of that size occurred about 350 years ago on the Nephi segment of the fault. Such an earthquake in 2050 could cause significant damage (especially to

older buildings), displace people from over 100,000 households, and cause over 14,000 deaths and life-threatening injuries.

Of particular concern is the number of high-risk unreinforced masonry buildings (URMs) in the state. A URM is a building in which the main supporting walls are made of material like brick, stone, or concrete and lack adequate steel or wood structural support to withstand the shaking of a large earthquake. In Utah, most URMs were built between the 1860s and the mid-1970s. About 165,000 URMs are currently at risk of being damaged or destroyed by an earthquake along the Wasatch Front. By comparison, California, another state with high earthquake risk, has only 26,000 URMs that have not been reinforced. (California prohibited the construction of URMs in the 1930s and began requiring the reinforcement of URMs in the 1980s.)

Disruption of utilities could leave people without power, water, and gas. Disruption of businesses could leave many Utahns without jobs and permanently damage the economy. The more Utahns do now to minimize damage from a large earthquake, the faster they will be able to recover.

FLOODING

Flooding is a significant risk to many places in the state, and floods are becoming more common as storms become more severe. Recently, multiple neighboring

states have experienced large-scale flooding from bigger-than-anticipated storms. Despite this, only 4,500 properties in Utah have federal flood insurance, even though 99% of Utah residents live in communities that are eligible for it. Utah's storm-water systems are designed for storms smaller than what the state is likely to experience in the future, which puts urban areas at a higher risk of floods than in the past. In addition, many of Utah's watersheds are not as healthy as they could be, which also could result in increased flooding, particularly after wildfires.

WILDFIRES

Wildfires have always occurred in Utah, but Utahns are now building more homes on the fringe of urban areas, closer to where wildfires usually occur. It is estimated that there are about 800–1,000 wildfires on average every summer in Utah, with 30% of these fires caused by humans. Thirteen percent of homes (128,800) in the state are at high or extreme risk of wildfires, with the number continuing to grow every year. Homes and communities can better withstand wildfires by reducing how scattered growth is, creating defensible spaces to buffer homes from fuel sources (e.g., brush and small trees), and building with fire-resistant materials.

EARTHQUAKE PROBLEMS AND SOLUTIONS

PROBLEM

Utah has 165,000 unreinforced brick buildings, which will cause 55% of deaths.

SOLUTION

Retrofit structurally weak buildings.

RESULTS

- Cost of retrofitting is \$5,000–\$10,000 per home.
- Deaths and life-threatening injuries caused by weak buildings are reduced by 70%.
- Even after retrofitting, these buildings would be severely damaged and uninhabitable.

PROBLEM

By 2050, the number of buildings in Utah will double; if new homes and buildings are built to the current code, many of them will be uninhabitable after an earthquake.

SOLUTION

Strengthen building codes.

RESULTS

- Cost of new buildings increases by approximately 1.5%.
- Risk of a new home being uninhabitable decreases by half.
- Deaths and life-threatening injuries from new buildings are reduced by 65%.

HOW WE CREATED A VISION:

PEOPLE AND PROCESS

To create a vision for the future of disaster resilience in Utah, a team of experts gathered over a two-year period to share knowledge and extensively research and discuss options for improvement.

Members of the Disaster Resilience Action Team were selected by Governor Gary Herbert and Envision Utah to represent a spectrum of professional experience and political affiliations. Team members included emergency managers, infrastructure specialists, and other experts from across the state. From 2013 to 2015, the action team met to identify Utahns' choices related to disaster resilience, create scenarios for public input, and synthesize a vision for the future. The process of creating this vision also included the following components:

- 1 A 2014 values study. This study was conducted by Heart+Mind Strategies to identify (1) what factors Utahns view as affecting their quality of life the most and (2) the underlying emotions and values tied to those factors. The study concluded that Utahns value disaster resilience because they want to feel safe. They also want to be confident in the future, knowing they can recover and return to their normal lives quickly after a disaster. (More information on the values study can be found in the Utahns' Values section on p. 17.)
- 2 The "Build Your 2050 Utah" web app. This app allowed Utahns to identify what disaster strategies are most important to them and interactively test the effects of certain decisions concerning disaster resilience. More than 3,000 people across Utah gave input through the app. The information gathered indicates that Utahns were interested in the following:
 - a) Improving Utah's resilience to disaster by retrofitting a substantial number of the state's unreinforced brick homes and buildings and much of the infrastructure.
 - b) Not building new development in high-hazard areas like faults, liquefaction zones, landslide/rock-fall areas, floodplains, and potential wildfire areas.
 - c) Designing new homes and buildings to be habitable after an earthquake.
- 3 The Utah Department of Emergency Management's Hazus software. This software was used to model the effects (including displacement, injuries, and deaths) of a 7.0 earthquake along the Salt Lake City segment of the Wasatch Fault in 2050.

The action team used this information to create four different scenarios for the future of disaster resilience in Utah. The four scenarios each represented varying levels of disaster resilience. In spring 2015, these scenarios (p. 21) were presented to the public in the Your Utah, Your Future survey, and 52,845 Utahns weighed in.

After receiving public input on the four scenarios, the action team met to frame a vision, including goals and strategies, to achieve what Utahns said they wanted for disaster resilience in 2050.

ACTION TEAM MEMBERS

CHAIRS



**LISA GROW
SUN**

*J. Reuben Clark Law School
at Brigham Young University*



**KRIS
HAMLET**

*Utah Division of Emergency
Management*

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Intermountain Healthcare

Brad Bartholomew

Utah Division of Emergency Management

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Lonnie Bullard

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Bob Grow

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Utah Division of Emergency Management

WHY DISASTER RESILIENCE MATTERS:

UTAHNS' VALUES

In 2014, Envision Utah conducted a statewide values study to identify (1) what factors Utahns view as affecting their quality of life the most and (2) the underlying emotions and values tied to those factors.

**DISASTER RESILIENCE
REACHES THE
CORE OF WHAT
UTAHNS WANT FOR
THEMSELVES AND
THEIR FAMILIES.**

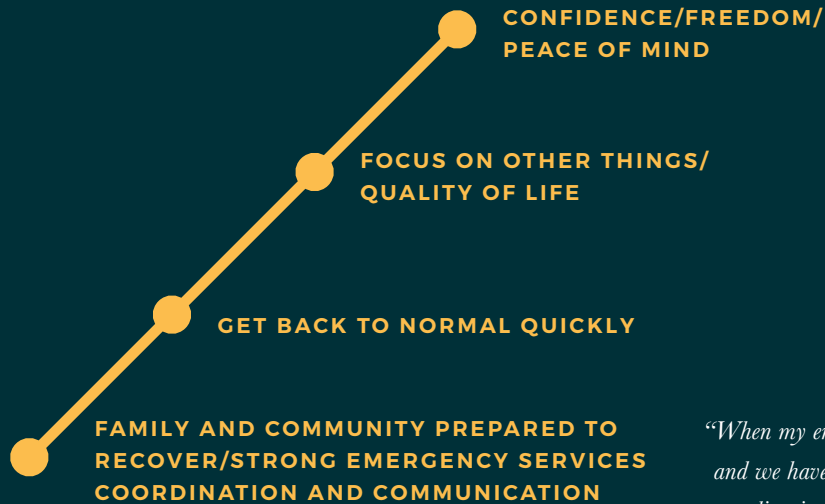
Utahns want a safe, secure place for themselves and their families. They also want a strong economy and secure jobs so they can provide for their families. Utahns believe that achieving both of these desires will lead to a sense of personal security and peace of mind concerning those they love. As a result, disaster resilience is important to Utahns. If Utah is prepared to face a major disaster, they can feel safe and be less worried for themselves and their families. They do not want a major disaster to force them or their children to leave Utah. They also want to be able to return to their normal lives quickly and easily following a catastrophic event. If Utah is prepared, Utahns will feel a sense of confidence and peace of mind.

DISASTER RESILIENCE AND PERSONAL SECURITY



“I want my family and community to be prepared to recover from a major disaster so that my family wouldn’t have to move away if a disaster occurs. If we’re prepared, I feel safe, and I don’t worry or stress about the risks of a disaster. This leads to a feeling of security and peace of mind.”

DISASTER RESILIENCE AND CONFIDENCE



“When my entire community is prepared and we have strong emergency services coordination, we can get back to normal quickly after a disaster. Knowing my community is prepared allows me to focus on other things and enjoy a high quality of life, which makes me feel confident and gives me peace of mind.”

CHOICES FOR THE FUTURE:

SCENARIO SUMMARIES

The following scenarios were drafted by the Disaster Resilience Action Team to represent possible outcomes for disaster resilience in 2050. The scenarios differed in the following variables:

- How many unreinforced brick buildings are retrofitted
- When/if Utah implements stronger building codes for new buildings
- The extent to which infrastructure is upgraded

- How much development takes place in hazardous areas

The scenarios were presented to the public as part of the Your Utah, Your Future survey in spring 2015.

The scenarios were titled Allosaurus, Bonneville Trout, Seagull, Quaking Aspen, and Segó Lily (the state fossil, fish, bird, tree, and flower).

53% OF UTAHNS CHOSE THE
QUAKING ASPEN SCENARIO.
ANOTHER 25% CHOSE THE SEGO
LILY SCENARIO.

ALLOSAURUS AND BONNEVILLE TROUT SCENARIO

No greater resilience to earthquakes, fire, and floods

Household Displacement



By 2050, Utah's ability to withstand and recover from natural disasters is generally not improved. We do not spend additional money or require any extra work from builders, the state,

or the public. Recovery time after a disaster is very long. Utah's economy is badly damaged, and large numbers of Utahns leave the state and never return.

WE ARE NOT MORE RESILIENT TO EARTHQUAKES BECAUSE:

- Weak buildings with unreinforced brick are not reinforced.
- Building codes are not strengthened to make new buildings more likely to be habitable.
- Schools, hospitals, and nursing homes are retrofitted very slowly.
- We continue to build in earthquake hazard areas.
- Roads, water, sewer, power, and gas lines are upgraded only when replaced.

WE ARE ALSO NOT MORE RESILIENT TO FLOODING AND WILDFIRE BECAUSE:

- Stormwater systems are not upgraded to accommodate larger storms.
- A large amount of scattered growth occurs on the fringe of urban areas, where homes are more vulnerable to wildfire.
- Homes on the urban fringe are not designed to be fire resistant.

WE ARE SOMEWHAT MORE RESILIENT TO EARTHQUAKES BECAUSE:

- One third of weak buildings with unreinforced brick are reinforced.
- Building codes are strengthened to make new buildings more likely to be habitable.
- Only one third of new buildings meet these new codes, which are not implemented until 2038.
- Schools, hospitals, and nursing homes are retrofitted slowly.
- Communities continue to grow in earthquake hazard areas, though some disaster-prone areas are avoided.
- Roads, water, sewer, power, and gas lines are upgraded to be somewhat more resilient.

WE ARE ALSO SOMEWHAT MORE RESILIENT TO FLOODING AND WILDFIRE BECAUSE:

- Stormwater systems are somewhat improved to accommodate larger storms.
- A large amount of scattered growth occurs on the fringe of urban areas, where homes are more vulnerable to wildfire.
- Only some homes on the urban fringe are designed to be fire resistant.

SEAGULL SCENARIO

Some greater resilience to earthquakes, fire, and floods



By 2050, Utah's ability to withstand and recover from natural disasters is somewhat improved. We upgrade one-third of structurally weak homes and construct one-third of new buildings so they are more likely to be habitable after a major earthquake.

These changes require some additional money and some extra work from builders, the state, and the public. Recovery time after a disaster is long. Utah's economy is quite badly damaged, and large numbers of Utahns leave the state and never return.

QUAKING ASPEN SCENARIO

Much greater resilience to earthquakes, fire, and floods



By 2050, Utah's ability to withstand and recover from natural disasters is substantially improved. We upgrade almost all structurally weak homes and construct all new buildings so they are more likely to be habitable after a major earthquake. These changes

require substantially more investment and significant work by builders, the state, and the public. Recovery time after a disaster is relatively quick, Utah's economy is not badly damaged, and only a small number of Utahns leave the state and never return.

WE ARE SIGNIFICANTLY MORE RESILIENT TO EARTHQUAKES BECAUSE:

- Almost all weak buildings with unreinforced brick are reinforced.
- Building codes are strengthened to make new buildings more likely to be habitable.
- Almost all new buildings meet these new codes, which are implemented as soon as possible.
- Schools, hospitals, and nursing homes are retrofitted quickly.
- Some communities continue to grow in earthquake hazard areas, but a serious effort is made to avoid disaster-prone areas.
- Roads, water, sewer, power, and gas lines are upgraded to be much more resilient.

WE ARE ALSO SIGNIFICANTLY MORE RESILIENT TO FLOODING AND WILDFIRE BECAUSE:

- Stormwater systems are substantially improved to accommodate larger storms.
- Only a small amount of scattered growth occurs on the fringe of urban areas, where homes are more vulnerable to wildfire.
- Most homes on the urban fringe are designed to be fire resistant.

WE ARE MODERATELY MORE RESILIENT TO EARTHQUAKES BECAUSE:

- Two-thirds of weak buildings with unreinforced brick are reinforced.
- Building codes are strengthened to make new buildings more likely to be habitable.
- Two-thirds of new buildings meet these new codes, which are implemented in 2024.
- Schools, hospitals, and nursing homes are retrofitted faster.
- Some communities continue to grow in earthquake hazard areas, but some disaster-prone areas are avoided.
- Roads, water, sewer, power, and gas lines are upgraded to be moderately more resilient.

WE ARE ALSO MODERATELY MORE RESILIENT TO FLOODING AND WILDFIRE BECAUSE:

- Stormwater systems are improved to accommodate larger storms.
- Only some scattered growth occurs on the fringe of urban areas, where it is vulnerable to wildfire.
- A moderate number of homes on the urban fringe are designed to be fire resistant.

SEGO LILY SCENARIO

Moderately greater resilience to earthquakes, fire and floods

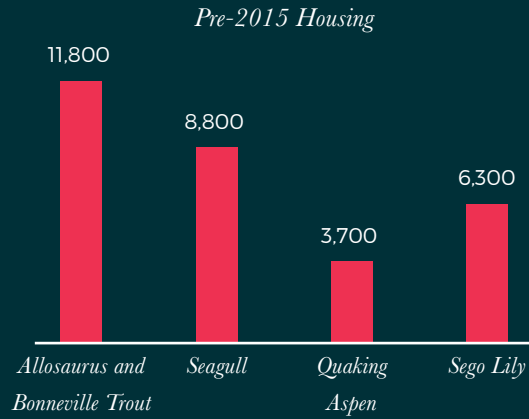


By 2050, Utah's ability to withstand and recover from natural disasters is moderately improved. We upgrade two-thirds of structurally weak homes and construct two-thirds of new buildings so they are more likely to be habitable after a major earthquake. These

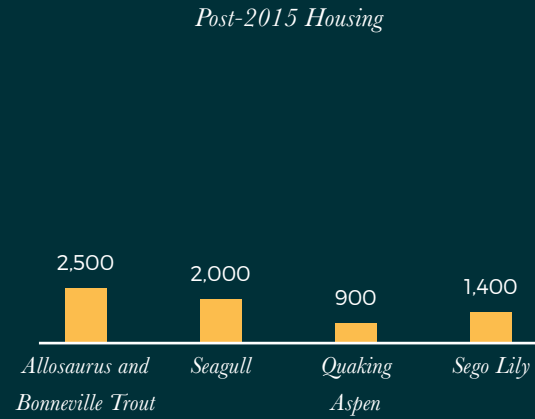
changes require a moderate amount of additional money and some extra work from builders, the state, and the public. Recovery time after a disaster is somewhat long, Utah's economy is damaged, and some Utahns leave the state and never return

SUMMARY OF SCENARIOS

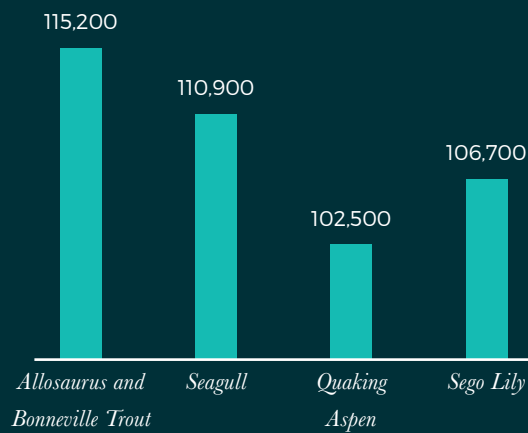
DEATHS AND INJURIES



DEATHS AND INJURIES



HOUSEHOLD DISPLACEMENT



YOUR UTAH, YOUR FUTURE

SURVEY RESULTS

In April and May of 2015, 52,845 Utahns shared their voice through the Your Utah, Your Future survey. Participants chose their favorite scenarios for disaster resilience and other topics. After choosing their favorite scenarios, survey participants had the option to answer a series of questions to prioritize disaster resilience among other issues, determine the most important outcomes related to disaster resilience, and identify how willing they would be to take specific actions to ensure those outcomes. The survey results were cross-checked against a random-sample survey to ensure they represented the desires and opinions of Utahns.

1

WHAT UTAHNS WANT

Utahns want to be more disaster resilient. Four out of five Utahns chose a scenario in which Utah's disaster resilience improves dramatically. More than half chose the scenario that makes the greatest improvement to disaster resilience, requiring the greatest investment. In this scenario, almost all unreinforced brick buildings are retrofitted, building codes are upgraded as soon as possible to strengthen new buildings, new homes and buildings are generally not built in disaster-prone areas, and infrastructure is upgraded to be disaster resilient.

2

WHY UTAHNS WANT IT

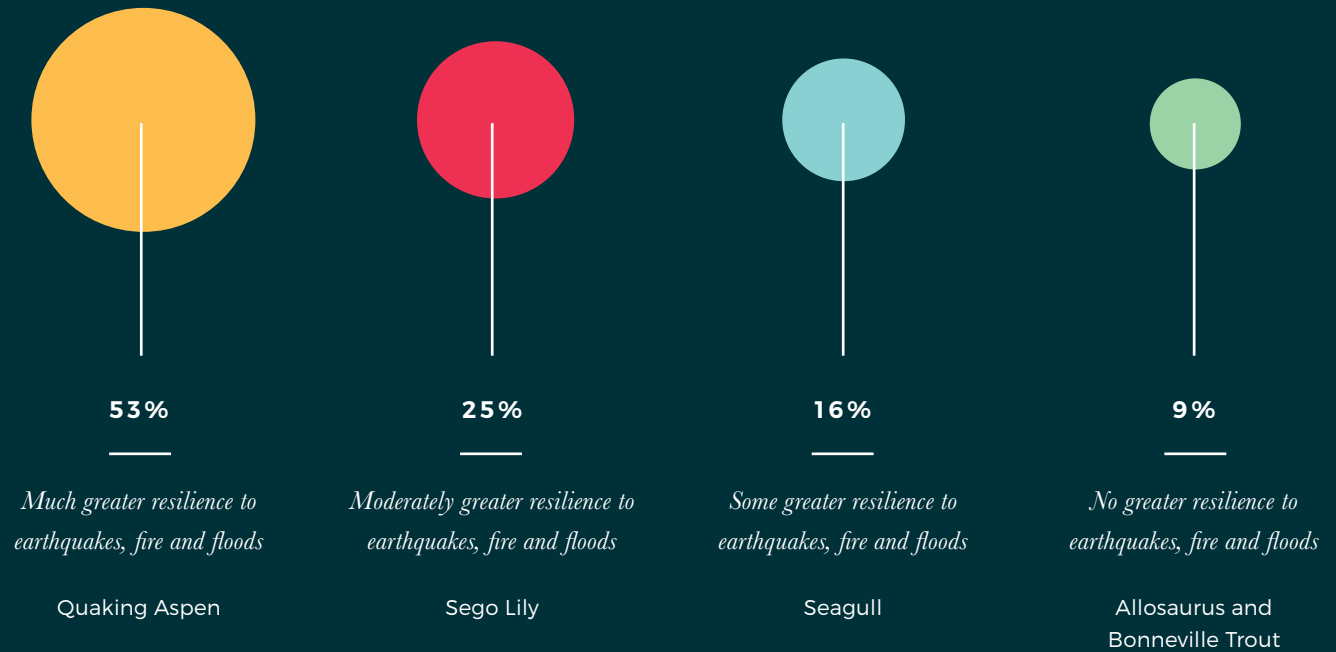
Utahns want to reduce the number of deaths and injuries that would occur in a disaster. They also want to decrease recovery time after a disaster, so they are able to return to their normal lives as quickly as possible. In addition, Utahns want to reduce how many people would be without a home after an earthquake and how much it would cost to repair the damage.

3

WHAT UTAHNS ARE WILLING TO DO

Utahns are very willing to do what it takes to become more resilient to disasters. Utahns are willing to pay the small additional cost for housing and utilities in order to be more disaster resilient. They are highly willing to require that homes in wild areas be built with fire-resistant material and that yards and open areas include places to capture water from large storms. Utahns are also willing to include swales that help capture stormwater in their yards, parks, park strips, and other open spaces.

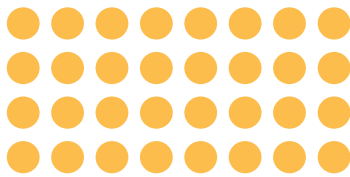
WHAT UTAHNS WANT



WHY UTAHNS WANT IT

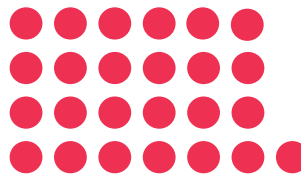
(OR WHAT OUTCOMES UTAHNS EXPECT FROM DISASTER RESILIENCE)

Survey participants were asked to allocate 100 points across these outcomes based on which they considered most important.



32%

Reducing the number of deaths and injuries a disaster would cause



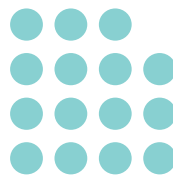
25%

Reducing how long it takes to recover from a disaster (restoring utilities, rebuilding, reopening businesses, etc.)



17%

Reducing the number of people who would be unable to live in their damaged homes after an earthquake



15%

Reducing how much it would cost to repair damage after a disaster

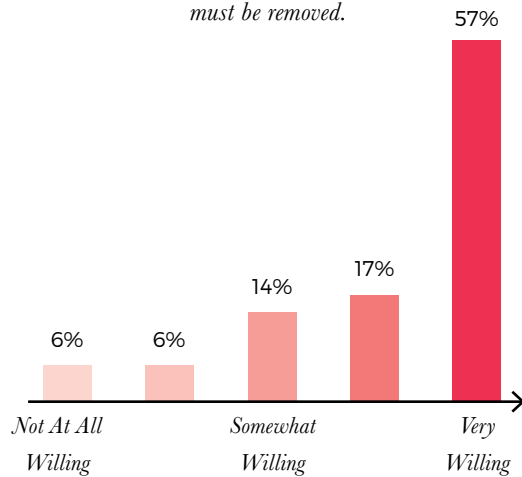


8%

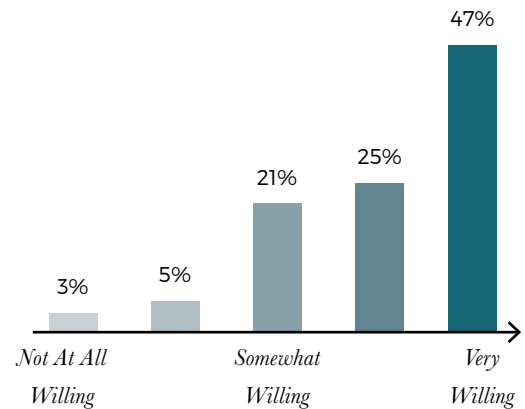
Limiting how much we spend on improving our disaster resilience

WHAT UTAHNS ARE WILLING TO DO TO IMPROVE DISASTER RESILIENCE

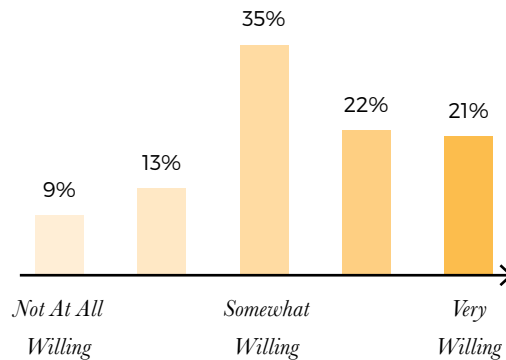
Require that any new home in a wild area must use fire-resistant materials and that wildfire fuel from the area surrounding the home must be removed.



Yards and open spaces (parks, park strips, etc.) in your neighborhood may need to include swales that help capture stormwater in the event of a very large storm.

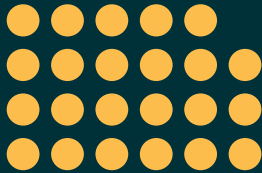


People would have to pay a little more for a house or for utilities to fund improvements.



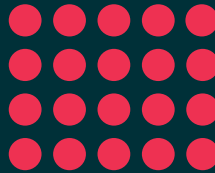
AGRICULTURE OUTCOMES THAT WOULD AFFECT DISASTER RESILIENCE

Survey participants were asked to allocate 100 points across these outcomes from agriculture based on which they considered most important.



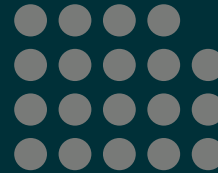
23%

Improving Utah's food self sufficiency



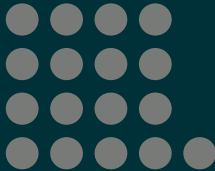
20%

Ensuring Utahns can eat locally grown food



19%

Maintaining the open space provided by farms and ranches



17%

Improving rural Utah's economy



12%

Maintaining Utah's agricultural heritage



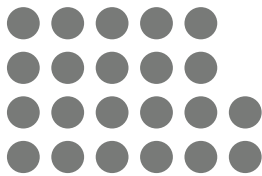
8%

Allowing agricultural land and water to convert through market forces to higher-paying uses like houses and businesses

Utahns want greater food self-sufficiency through agriculture as well as more locally grown foods. These changes would make Utah's food supply less vulnerable to the kinds of disruption that can be caused by a natural disaster both in Utah and outside of the state.

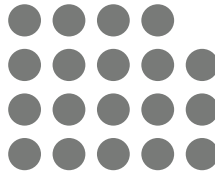
ENERGY OUTCOMES THAT ALSO IMPLICATE DISASTER RESILIENCE

Survey participants were asked to allocate 100 points across these outcomes from energy based on which they considered most important.



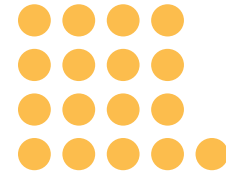
22%

Minimizing how much air pollution happens (primarily outside the Wasatch Front) when we produce electricity



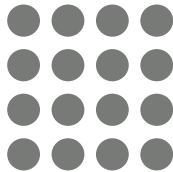
19%

Minimizing how much carbon dioxide (a greenhouse gas that is implicated in climate change) is emitted when we produce electricity



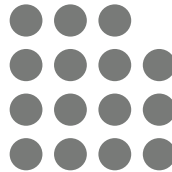
17%

Limiting our energy supply's vulnerability to disruption



16%

Limiting how much each household needs to spend for energy



15%

Minimizing how much water we use to produce electricity



12%

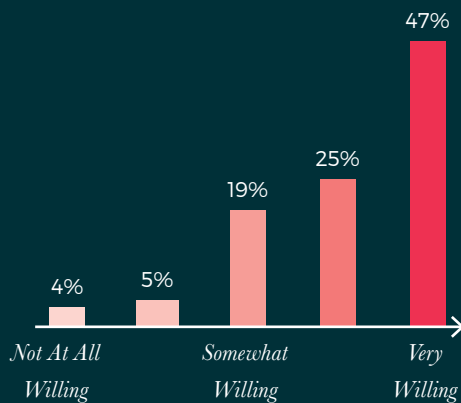
Ensuring nuclear power production doesn't happen in Utah

Utahns want to ensure that our energy supply is not vulnerable to disruption. Disruption risk can be reduced through more resilient infrastructure and other means.

OTHER ACTIONS THAT WOULD INVOLVE DISASTER RESILIENCE

WILLINGNESS TO IMPROVE AIR QUALITY

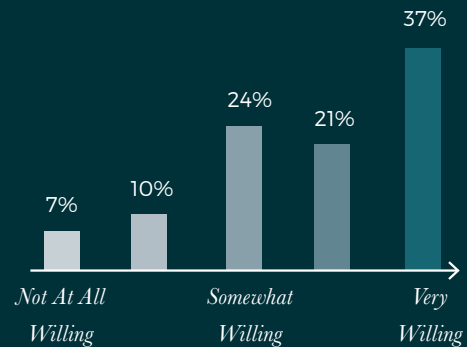
Build energy efficient homes and businesses with less polluting appliances & higher upfront cost.



Utahns are very willing to build more energy-efficient homes and businesses to improve air quality. The same improvements that make unreinforced brick buildings more earthquake resilient may also improve energy efficiency.

WILLINGNESS TO EXPAND AGRICULTURE

Utah would no longer be able to build homes and businesses where high-quality agricultural lands exist.



Utahns are willing to avoid building on high-quality agricultural lands, which often have high risk for liquefaction in an earthquake.

REALIZING THE VISION:

RECOMMENDED STRATEGIES



1 Retrofit existing buildings and infrastructure for disaster resilience.

- a) Retrofit existing unreinforced masonry buildings in order to protect lives and prevent injuries in the case of an earthquake.
- b) Retrofit buildings that house vulnerable populations (schools, nursing homes, hospitals, etc.) to be more resilient to earthquakes and other disasters.
- c) Update existing road, water, sewer, power, and gas lines so that they can better withstand an earthquake; allow cost recovery for such upgrades through utility rate structures.
- d) Retrofit existing stormwater systems, yards, and open spaces to accommodate rainfall and runoff from the larger storms that are projected to occur in the future.
- e) Retrofit existing buildings in wildfire-prone areas to be more resilient to fire (e.g., add metal roofs, noncombustible siding, etc.).
- f) Consider using financial incentives (grants, loans, partnerships, tax deductions, etc.) or regulation to make existing homes and businesses more resilient to earthquakes or to rebuild these structures to higher resiliency standards.

2 Improve the design and construction of new homes, businesses, infrastructure, and communities so they are more resilient to disasters.

- a) Locate new development away from fault lines, floodplains, liquefaction areas, and areas at high risk for wildfires to the extent feasible.
- b) Locate structures that house vulnerable populations (schools, hospitals, nursing homes, etc.) away from disaster-prone areas; design these buildings to be particularly resilient.

SOME BENEFITS OF RETROFITTING EXISTING BUILDINGS AND INFRASTRUCTURE FOR DISASTER RESILIENCE:

- Reduces the number of people who are killed or injured in older buildings during an earthquake
- Protects populations most at risk of being harmed in an earthquake
- Increases the chance that Utahns will have critical services like drinking water, power, heat, and sewer after a disaster
- Reduces flooding risk from the larger storms that are predicted
- Reduces number of homes destroyed by wildfire

SOME BENEFITS OF IMPROVING DESIGN AND CONSTRUCTION:

- Prevents unnecessary deaths and injuries
- Saves time, energy, and money during recovery and rebuilding
- Decreases how many people can't remain in their homes after an earthquake
- Protects the most vulnerable Utahns

SOME BENEFITS OF IMPROVING DESIGN AND CONSTRUCTION CONT'D:

- Increases the chance that Utahns will have critical services like drinking water, power, heat, and sewer after a disaster
- Reduces flooding risk from the larger storms that are predicted
- Reduces how many homes are destroyed by wildfires

SOME BENEFITS OF IMPROVING DISASTER RESPONSE AND RECOVERY SYSTEMS:

- Shortens disaster response time
- Allocates resources and personnel efficiently and effectively
- Saves lives and lessens the initial impact of a disaster
- Prevents hospitals from being inundated by patients
- Keeps hospitals and critical facilities functioning during disasters
- Ensures critical staff come to work and stay on the job

- c) Improve the structural resilience of new buildings so they are more likely to be habitable after a major earthquake.
- d) Explore and encourage redundant and resilient features, such as energy and water independence, in homes and businesses.
- e) Ensure new road, water, sewer, power, and gas lines are built to be resilient to earthquakes.
- f) Build stormwater systems that will accommodate rainfall and runoff from the larger storms that are projected to occur in the future.
- g) Implement innovative urban design (e.g., swales in yards, open spaces, and park strips and stormwater retention on residential lots) to reduce flooding during larger storms.
- h) Improve Utah's watersheds to reduce flooding.
- i) Limit homes and buildings in fire-prone areas, and build communities to slow the expansion of Utah's urban/wildland interfaces and intermix areas.
- j) Use fire-resistant materials when constructing homes in wild areas, and remove wildfire fuels (e.g., brush and dense trees) from the areas surrounding the homes.

3 Constantly improve disaster response and recovery systems so that Utahns are better able to handle the initial impact of disasters and help communities recover quickly.

- a) Continually update and improve plans that organize how disasters will be managed (evacuation efforts, triage set-ups, transporting people to the hospital, etc.).
- b) Increase the capacity of emergency medical systems to handle a worst-case disaster scenario.

- c) Build redundant water, power, gas, and sewer infrastructure at critical facilities like hospitals so that they can function even if a disaster disrupts utilities.
- d) Create a plan to effectively mobilize critical staff (EMTs, doctors, nurses, etc.); establish procedures to help take care of their families in an emergency.
- e) Coordinate multiagency recovery efforts, timelines, personnel, and equipment so that all critical infrastructure is fixed quickly.

4 Educate citizens, businesses, and governments, and create programs and resources to improve disaster resilience.

UTAH DISASTER RESILIENCE INFO:

- There is a one in four chance that a large earthquake will impact the Wasatch Front Region in the next 50 years.
- 80% of Utah's population is at risk of earthquake damage.
- 13.2% of homes (128,800) are at high or extreme risk of wildfires.

