

EXPLORING WEATHER MITIGATION FOR EXISTING HOMES



Heat Island Effect

Formed by several factors:

Reduced Natural Landscapes in Urban Areas,
Urban Material Properties, Urban Geometry,
Heat Generated from Human Activities, Weather
& Geography

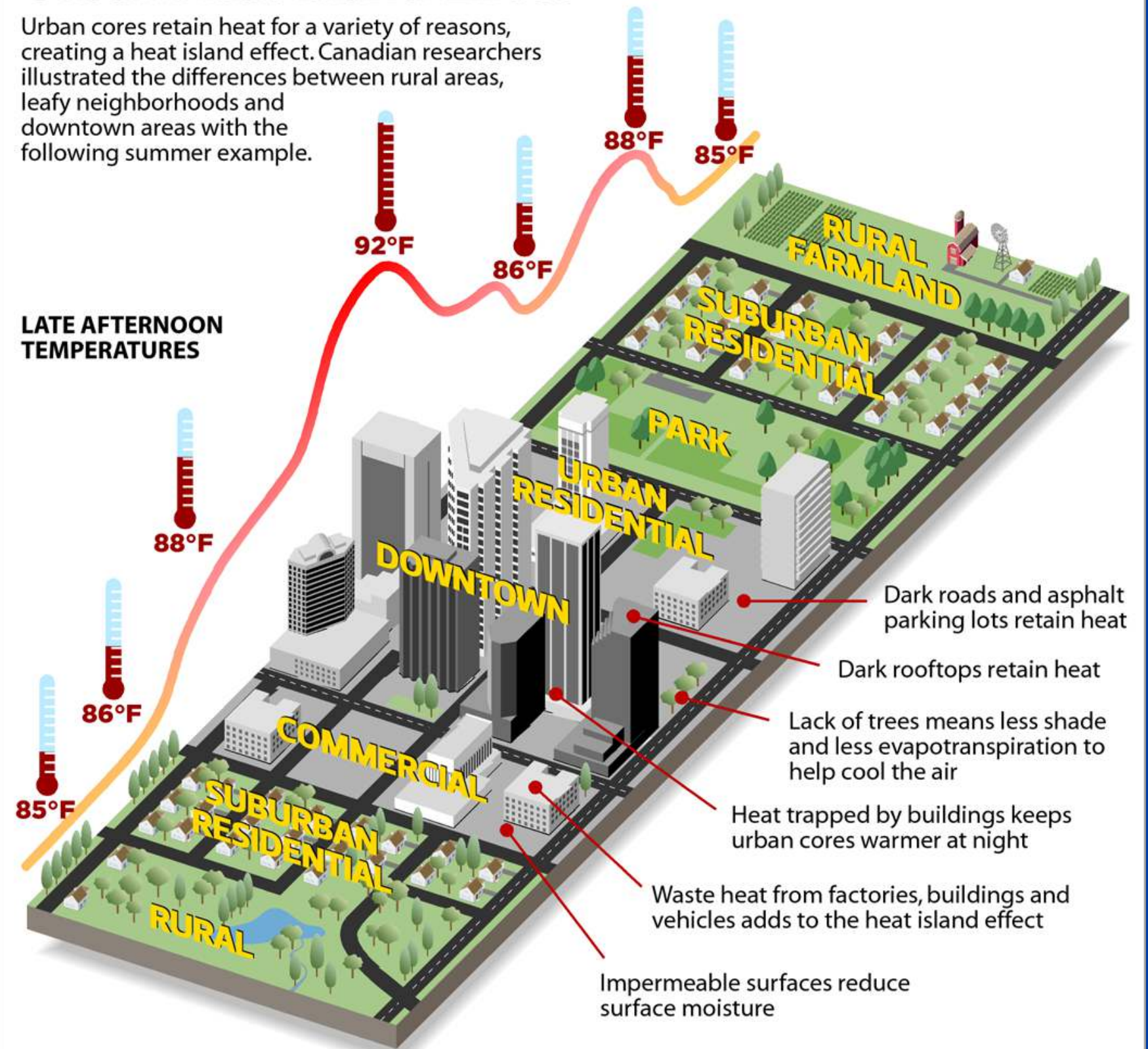
Effects:

- Increased Energy Consumption of a Home
- Elevated Emissions of Air Pollutants & Greenhouse Gases
- Compromised Health & Comfort
- Impaired Water Quality

Source: <https://www.epa.gov/heatislands/what-are-heat-islands#impacts>

Urban Heat Island Effect

Urban cores retain heat for a variety of reasons, creating a heat island effect. Canadian researchers illustrated the differences between rural areas, leafy neighborhoods and downtown areas with the following summer example.



SOURCE: D.S. Lemmen and F.J. Warren, Climate Change Impacts and Adaptation

PAUL HORN / InsideClimate News

ENERGY & UTILITY COSTS

- Extreme Heat : Higher electricity bills
- Extreme Cold : Higher electricity/gas bills
- Sun Exposure : Constant sun exposure can raise cooling costs and increases wear on hvac units and roofs, but could also provide for solar panels to off-set use
- Wind Exposure : Strong winds increase wear on roofs and fencing

REDUCE HEAT = LOWER UTILITIES = SAVE \$\$

- Cool Roofs reflect or release the sun's solar energy rather than retain it, are typically 50–60° F (28–33° C) cooler than traditional roofs.
- **BENEFITS** : Lower energy bills and energy demand which decreases air pollution, increased comfort of occupancy
- Cool Pavements store less heat and reflect more solar radiation than conventional pavements. They may be permeable or porous to allow water to percolate and evaporate, cooling the pavement surface and surrounding air.
- **BENEFITS** : Reflective pavements can improve nighttime visibility Permeable pavements can reduce stormwater runoff and tire noise, and can improve safety during rainstorms
- Trees and Vegetation provide shade and cool the air through evapotranspiration.
BENEFITS : More green space allows for better stormwater management, less air pollution and erosion, lower energy bills and energy demand

Source: <https://www.epa.gov/heatislands/what-are-heat-islands#impacts>

MAINTENANCE & REPAIRS

- Rain : Can effect foundations without proper drainage systems and gutters, flooding from increased non-permeable services can cause flooding
- Snow & Ice : Can damage roofs, trees, freezing temperatures causing sttress on materials like water lines, water heaters, etc
- Heat & Sunlight : Cracked siding, fading paint/stain

INSURANCE PREMIUMS

- CLIMATE RISK IS RESHAPING REAL ESTATE FUNDAMENTALS
 - in transforming the U.S. housing market through two powerful indirect forces - soaring insurance costs and shifting consumer preferences

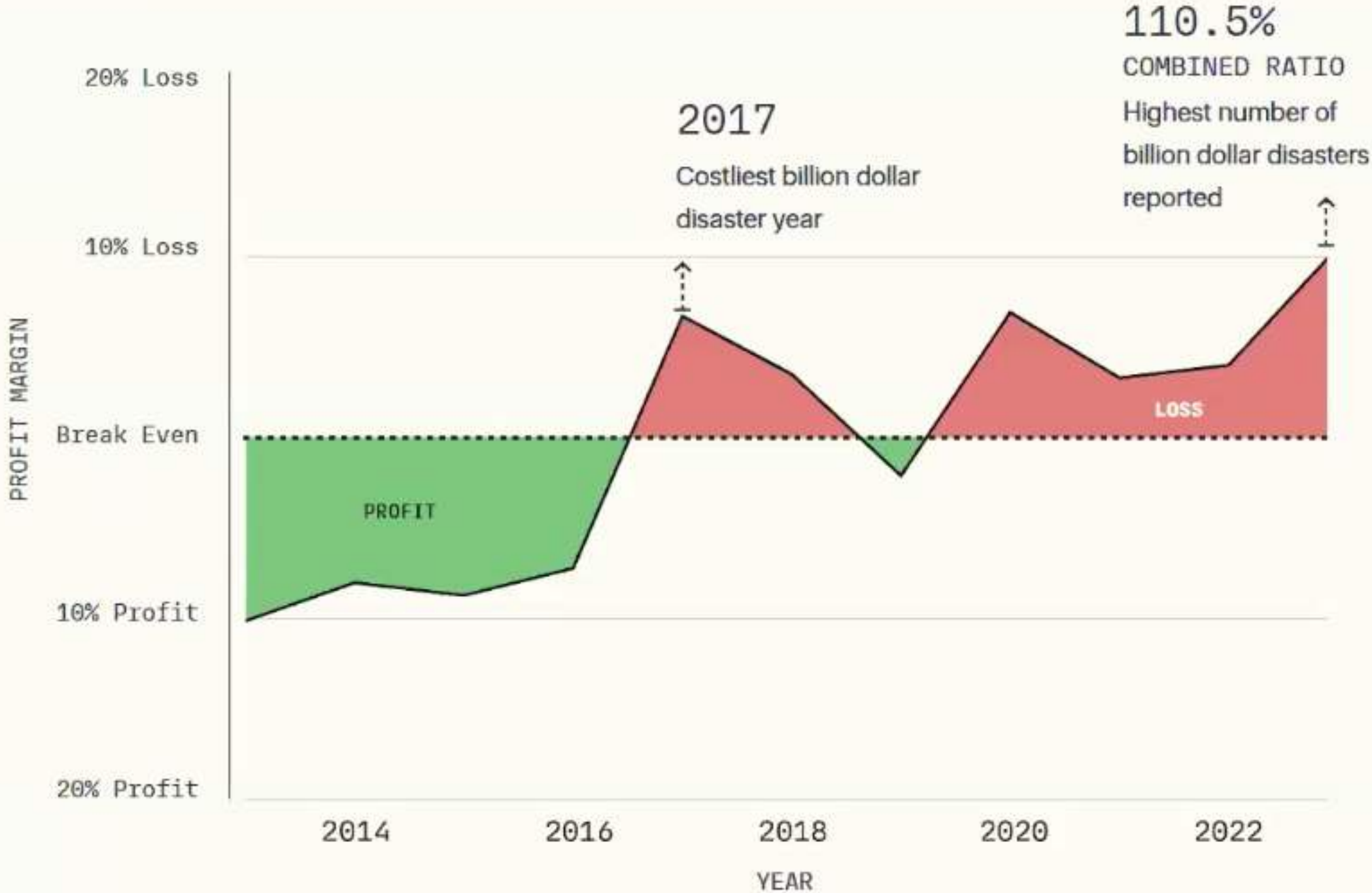
INSURANCE PREMIUMS

- Insurance costs remained steady at 7-8% of Mortgage & Interest payments throughout the 2000's-2010's. Insurance now consumes over 20% of mortgage payments as of 2022.
- The 30 year fixed-rate mortgage, is being destabilized by climate adjusted insurance premiums. This means the cost of home ownership is going up. This does not include flood insurance.

INSURANCE PREMIUMS

- In 2023, home insurers faced their deepest losses in a decade, paying out 10.5% more in incurred losses and expenses than they collected in premiums. To make up for this, they will continue to increase premiums to an actuarially sound price.
- Unexpected increases in costs of Labor and Materials since 2020, has contributed to the high expenses.

HOMEOWNERS INSURANCE INDUSTRY ANNUAL COMBINED RATIO, 2013-2023



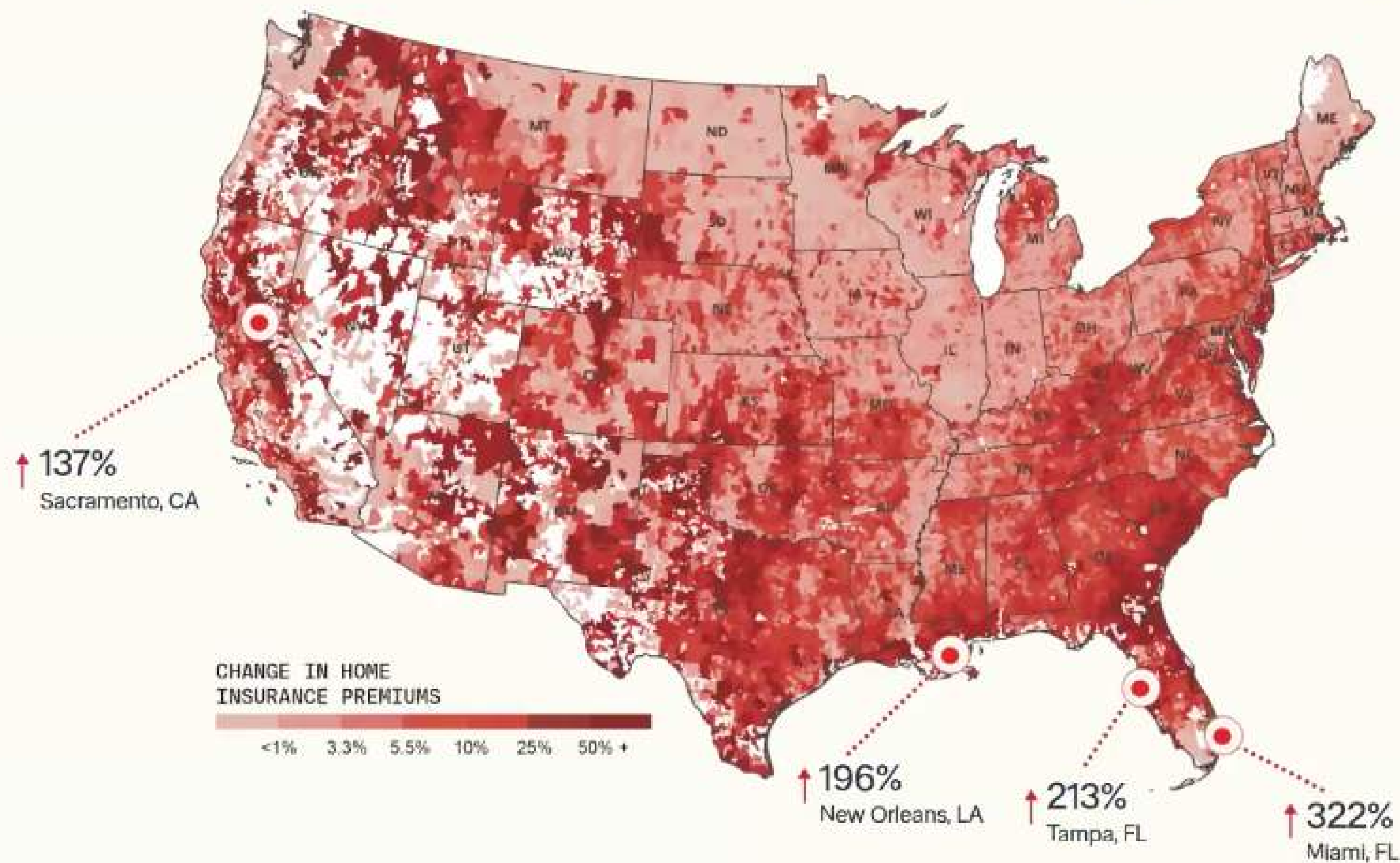
SOURCE: S&P MARKET INTELLIGENCE.

INSURANCE & PROPERTY VALUES

- Federal Reserve Chair Jerome Powell

2:21

PROJECTED HOMEOWNERS INSURANCE INCREASE DUE TO INCREASING
RISK OF PROPERTY DAMAGE FROM CURRENT LEVELS TO 2055



NOTE: PERCENT INCREASES ARE PROPORTIONAL TO THE PERCENT INCREASE IN AVERAGE ANNUAL LOSSES (AAL).
PERCENT INCREASE OVER TIME DOES NOT ACCOUNT FOR INFLATION.

As insurers continue to retreat from high-risk areas, homeowners and prospective buyers may find themselves grappling with a tightening market where both insurance and mortgage availability become increasingly scarce. The financial landscape for housing remains uncertain, with affordability and accessibility facing mounting pressure from both climate-related risks and economic factors.

PROPERTY VALUE & RESALE

FIRST STREET

Paradise: A case study.

Paradise experienced large-scale property damages and population displacement during the Camp Fire in 2018. More than 50,000 people were displaced and more than 18,000 structures were destroyed, causing an estimated \$16.5 billion in damage. These extreme impacts also caused Paradise to default on its municipal bonds in the months following the Camp Fire. Furthermore, sustained high levels of wildfire and smoke exposure in Paradise resulted in cascading effects of population decline, decreasing property values, and accelerating insurance increases.



PHOTO SOURCE: NOAH BERGER, AP



Dr. Jeremy Porter

CHANGES IN INSURANCE, POPULATION, AND PROPERTY VALUE SINCE THE CAMP FIRE IN PARADISE, CA

	2018	2023	Absolute change	Percent change
Insurance Cost	\$2,178	\$2,979	+\$801	↑ 36.8%
Population	26,532	8,285	-18,247	↓ -68.8%
Property Value	\$570,602	\$330,310	-\$240,292	↓ -42.1%

SOURCES: U.S. CENSUS BUREAU, AMERICAN COMMUNITY SURVEY;
ZILLOW ZHVI.

PROPERTY VALUE & RESALE

- Homes in Climate Resilient areas (mild temperatures, low disaster risk) may appreciate more steadily
- Properties in flood zones, storm-prone regions may lose value over time as Buyer's consider higher long-term costs & insurance difficulties.
- Eco-friendly weather adaptations (solar, storm windows, double pane windows, good insulation, can increase resale value

PROPERTY VALUE & RESALE

FIRST STREET

Applying the First Street model at a hyper-local level, reveals 5 key classifications.

- ### 1. Climate Abandonment

High-climate risk areas experiencing population decline and premium spikes, leading to a sustained exodus of residents.

- ## 2. Risky Growth

High-climate risk areas where population continues to grow despite escalating insurance premiums, suggesting other strong economic or social drivers.

- ### 3. Tipping Points

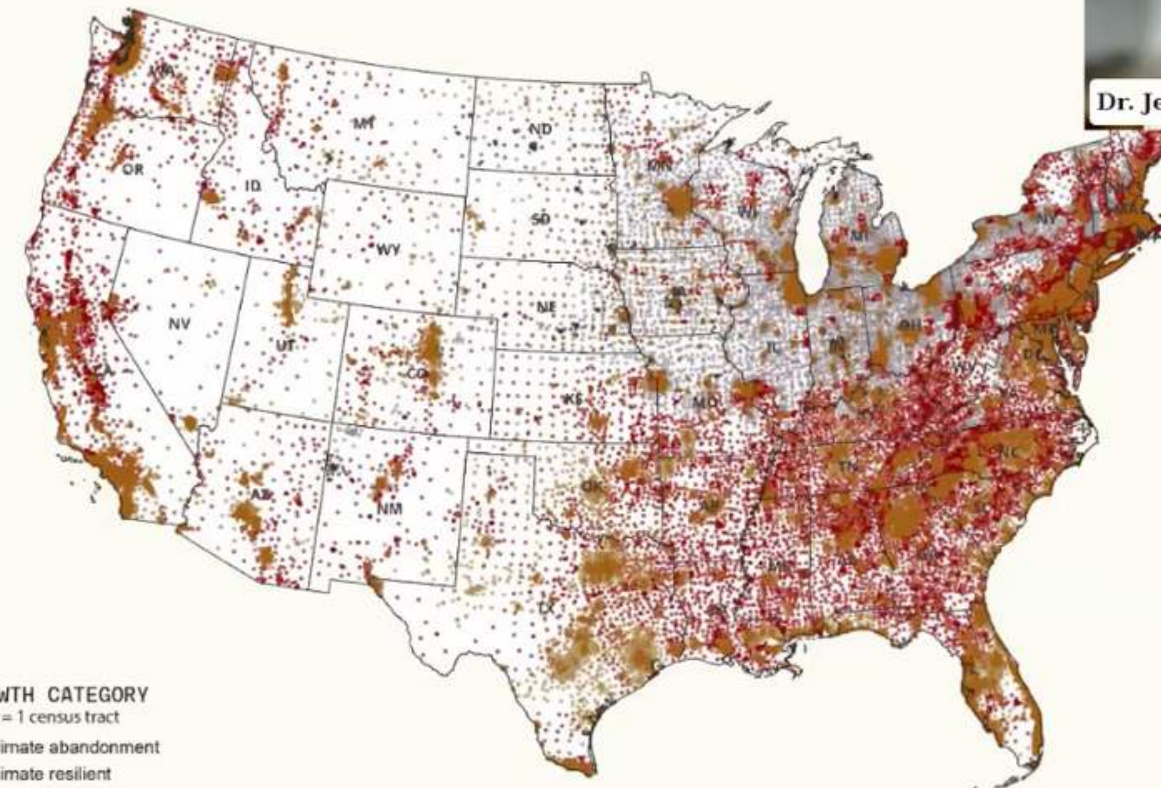
High-climate risk areas that show initial population growth followed by decline as rising premiums and climate impacts reach unsustainable levels

- #### 4. Climate Resilient

Low-climate risk areas attracting population growth while maintaining stable insurance rates, indicating sustainable development.

- ## 5. Economic Decline

Low-climate risk areas losing population despite stable insurance rates, suggesting economic factors rather than climate drive the decline.



GROWTH CATEGORY
1 dot = 1 census tract

- Climate abandonment
- Climate resilient
- Economic decline
- Risky growth
- Tipping

21,750

Climate abandonment neighborhoods

25,594

Risky growth neighborhoods

22,682

Tipping point neighborhoods

| 9,063

Economic decline
neighborhoods

| 4,107

Climate resilient neighborhoods



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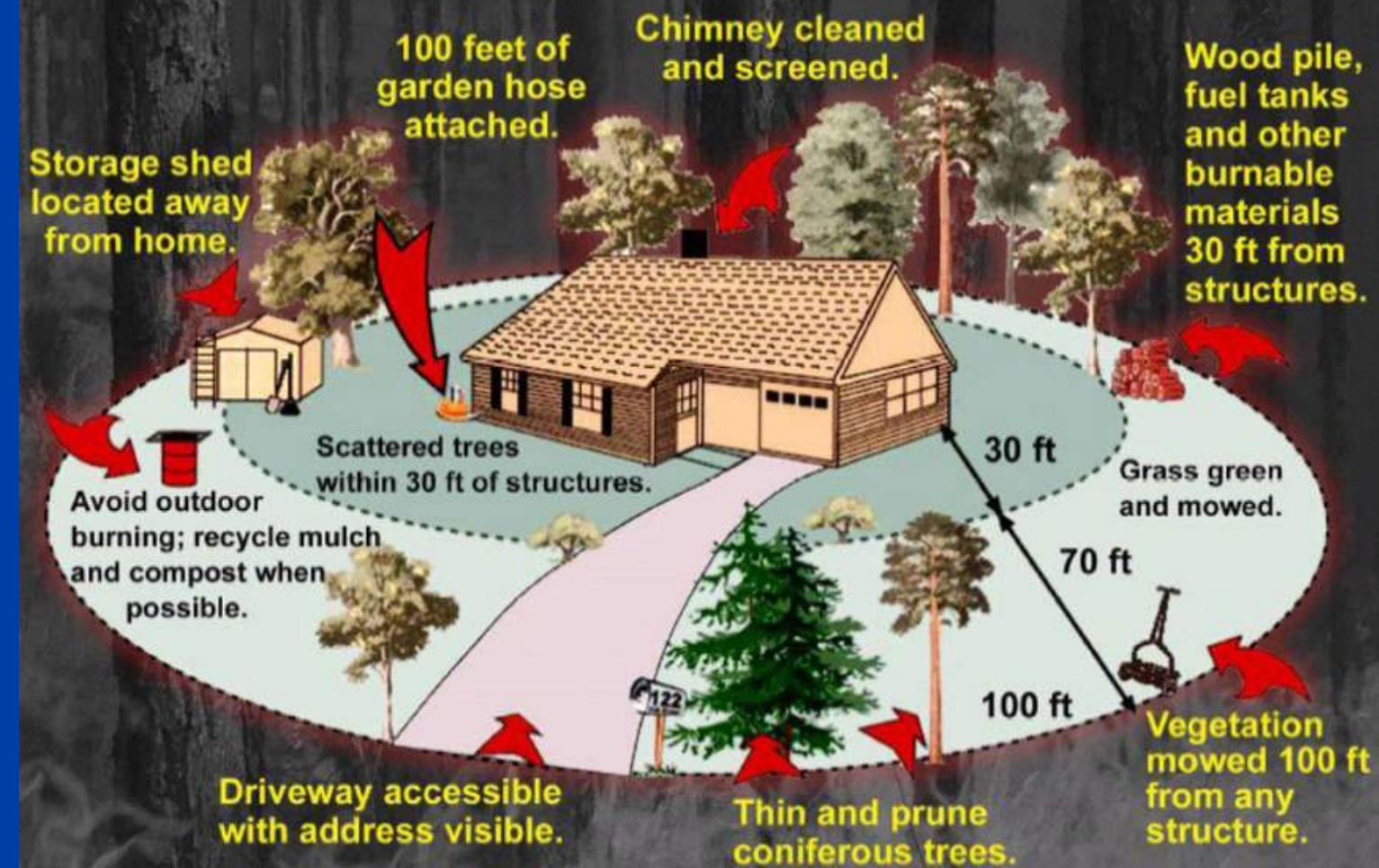
FIRSTSTREET.ORG



PREVENTATIVE COSTS

- Homeowners can take measures to reduce their risks to help save them long term operating costs and insurance premiums :
 - Storm-proofing : Fortified roofs
 - Proper insulation, products like spray foam and structurally insulated panels and insulated concrete forms are great products to reduce energy costs and re-inforce the structure.

Are you Firewise?



PREVENTATIVE COSTS



PREVENTATIVE COSTS

- Wildfires : Building Materials that reduces the risk of building ignition :
 - fire-resistant materials
 - Aluminum, Brick, Stone, Sheet Iron, Slate, Tile
 - Fire-retardant treatment
 - wood siding, cedar shakes, exterior wood paneling, etc\
- Living close to fire stations and fire hydrants
- Fire-resilient landscaping
 - Landscaping.

RESOURCES

OG&E Programs



Attic Insulation

Upgrade your attic insulation and get up to \$500 in rebates.

[Rebate Form](#)

[Eligibility & Guidelines](#)



ENERGY STAR rated Windows

Get up to \$350 for installing ENERGY STAR rated windows.

[Rebate Form](#)

[Eligibility & Guidelines](#)



ENERGY STAR rated Doors

Get up to \$200 for installing ENERGY STAR rated doors.

[Rebate Form](#)

[Eligibility & Guidelines](#)



ENERGY STAR certified Smart Thermostats

Get a \$50 rebate for installing an ENERGY STAR certified Smart Thermostat.

[Rebate Form](#)

[Eligibility & Guidelines](#)



HVAC Burnout Replacement

Save up to \$3,000 on a replacement HVAC system.

[Rebate Form](#)

[Eligibility & Guidelines](#)

Department of Energy

Pearl Certification

OK Secretary of Energy &
Environment

City of OKC Green Home
Loans

First Street

Cool Roofs



HomeStyle® Energy Eligible Improvements

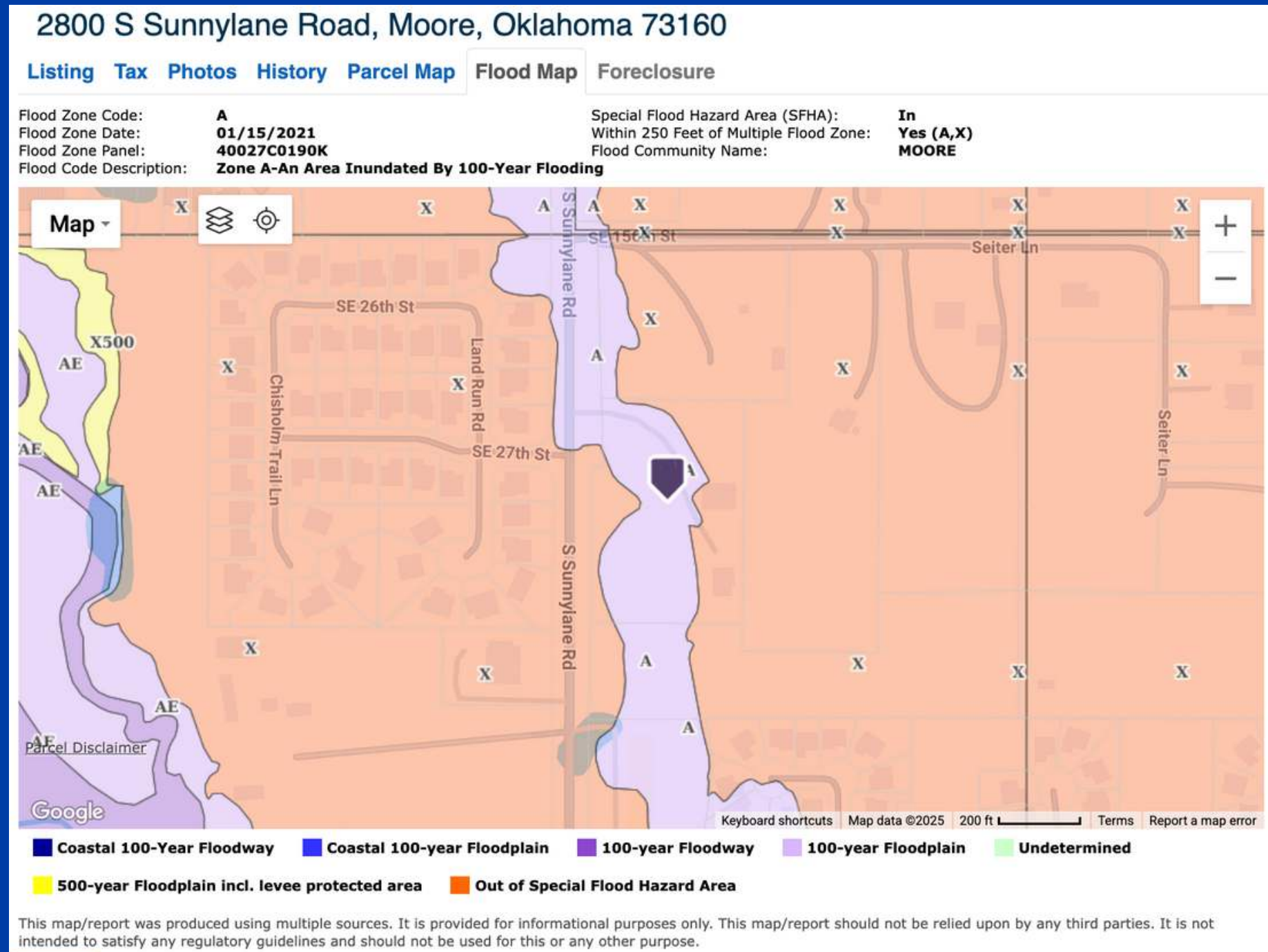
HomeStyle® Energy does not always require an energy report. Any of the following improvements are eligible for HomeStyle Energy without an energy report. For energy items not listed in the table below, refer to our Energy Report requirements (*Selling Guide section B5-3.2-03, HomeStyle Renovation Mortgages: Collateral Considerations*).

Note: All energy-related improvements must be permanently affixed to the property except for certain appliances installed with kitchen and utility room remodels when completed as part of a HomeStyle Renovation loan. Refer to Fannie Mae Selling Guide, section B5-3.2-01, HomeStyle Renovation Mortgages, for additional information.

Energy Efficiency	Renewable Energy Production	Water Efficiency	Resiliency or Preventative Improvements and Environmental Hazard Damage Repairs
Improvements which can be reasonably expected to reduce household energy usage, including but not limited to: - Any ENERGY STAR®-certified product, as evidenced by energystar.gov/products - Insulation (attic, floors, walls, basement) - Air sealing (including weather-stripping and caulking doors and windows, sealing around plumbing fixtures and penetrations, and sealing around light fixtures and wire penetrations) - Windows and doors) - Duct sealing & duct insulation - Heating and Cooling - HVAC systems and components - Air-source heat pumps - Geothermal heat pumps - Furnaces - Boilers - Ductless heating & cooling - Central air conditioner - Water Heaters - Heat pump water heaters - High efficiency gas storage water heaters - Solar water heaters - Whole home tankless gas water heaters	Any improvement that produces clean energy to be used on the property, including but not limited to: - Solar panels - Geothermal systems - Wind power devices - Micro-hydropower systems	Any improvement which can be reasonably expected to reduce water consumption, including but not limited to: - Installation of Low-Flow fixtures (e.g., toilets, faucets, and showerheads), and water-savings toilets - Sinks and faucets with auto shut-off mechanisms - Irrigation systems, such as low-flow sprinkler system or sprinkler system with a rain sensor - Automatic shower shut-off timer valves	Repairs to homes damaged in a natural disaster or by an environmental disaster and to install resiliency or preventative improvements, including but not limited to: - Storm surge barriers - Foundation retrofitting for earthquakes - Hazardous brush and tree removal in fire zones - Retaining walls to address mud or water flows - Other items specifically needed to either repair environmental hazard damage or improve the home's ability to withstand environmental hazards such as hurricanes, tornadoes or windstorms, earthquakes, flooding, landslides, and wildfires - Installation of radon remediation systems - Whole-Home Back-Up Power (e.g., house generators and battery back-up systems)

<https://singlefamily.fanniemae.com/originating-underwriting/mortgage-products/homestyle-energy-mortgage>

MLSOK LISTING MAP



Zone A

Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones. Flood Insurance is required if the house is located in the Flood Zone.

FEMA Definition

NATIONAL FLOOD INSURANCE PROGRAM [R]

<https://www.floodsmart.gov/>

STATE DISCLOSURES REPORTER: FLOOD DISCLOSURE REQUIREMENTS

<https://narflooddisclosure.legalresearch.com/?ctid=19300>

OKLA HOMA REAL ESTATE COMMISSION PROPERTY DISCLOSURES

Flood and Water	Yes	No
3. What is the flood zone status of the property?		
4. Are you aware if the property is located in a floodway as defined in the Oklahoma Floodplain Management Act?		
5. Are you aware of any flood insurance requirements concerning the property?		
6. Are you aware of any flood insurance on the property?		
7. Are you aware of the property being damaged or affected by flood, storm run-off, sewer backup, draining or grading defects?		
8. Are you aware of any surface or ground water drainage systems which assist in draining the property, e.g. "French Drains?"		
9. Are you aware of any occurrence of water in the heating and air conditioning duct system?		
10. Are you aware of water seepage, leakage or other draining defects in any of the improvements on the property?		

[OREC LINK](#)

INSURANCE PREMIUMS

- This US Treasury Report highlights the highest loss ratios in the highest risk zip codes, meaning that insurance premiums in the those areas will see a disproportionate increase in premiums.

<https://home.treasury.gov/news/press-releases/jy2791>

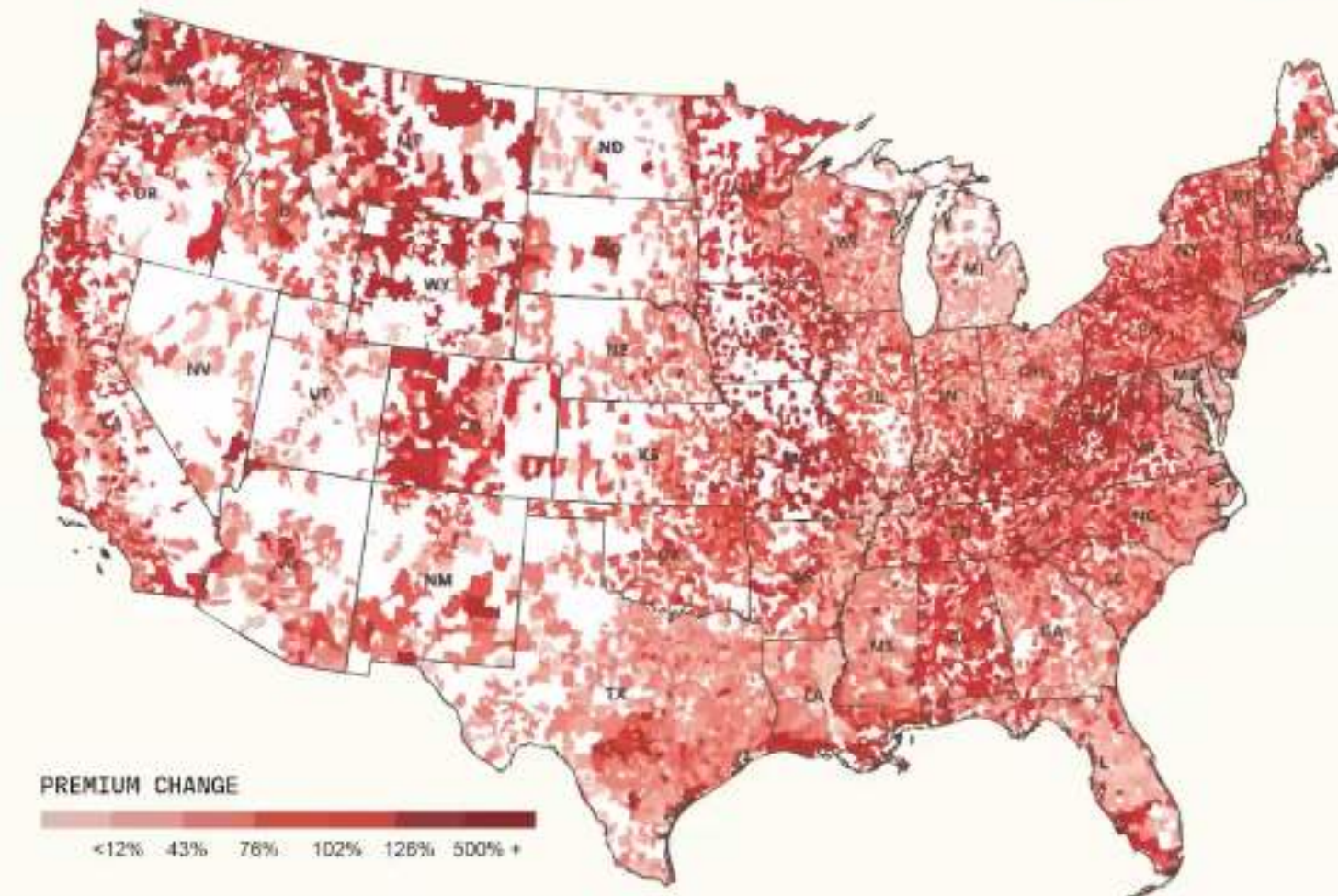
NAR FLOOD INSURANCE POLICIES

- NFIP changes in flood insurance coverage, increasing premiums to cover the costs of actual repairs.
- National Association of REALTORS® is advocating for long-term authorization and incremental reforms to bring certainty to real estate markets
- Accurate, modernized and comprehensive flood mapping nationwide to enable informed, responsible decisions
- Offering re-disaster mitigation grants, loans and buyouts for property owners to reduce flood risk and risk-based insurance rates.

Accounting for FEMA's Risk Rating 2.0 program highlights additional insurance increases.

In response to widespread losses, the FEMA implemented Risk Rating 2.0 in 2021 to price flood insurance based on each property's unique risk factors rather than broader geographic zones. After going into effect in April 2023, RR2.0 increased premiums across zip codes, particularly along rivers and coastlines.

PERCENT CHANGE IN NFIP FLOOD INSURANCE PREMIUMS



SOURCE: FEMA

NOTE: MAPPED AREAS ARE ONLY THOSE WITH NFIP POLICIES;
WHITE AREAS INDICATE ZIP CODES NOT IN FEMA FLOOD ZONES.



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NAR FLOOD INSURANCE POLICIES

- Removing barriers to private flood insurance so consumers can choose lower-cost options that meet federal coverage requirements
- Charging full-risk rates aligned to property specific flood risk while ensuring grandfathered properties transition gradually to avoid unreasonable premium increases
- Improving claims data transparency while maintaining disclosure requirements at the state level

NAR FLOOD POLICIES

- Supporting the Office of the Flood Insurance Advocate to assist homeowners with disputes
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NAR FLOOD INSURANCE POLICIES

- link: <https://www.nar.realtor/flood-insurance>



**THANK
YOU!**

CITY
BURB