

The Costs of Delay

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The Climate Center
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ENERGY
INNOVATION 
POLICY & TECHNOLOGY LLC



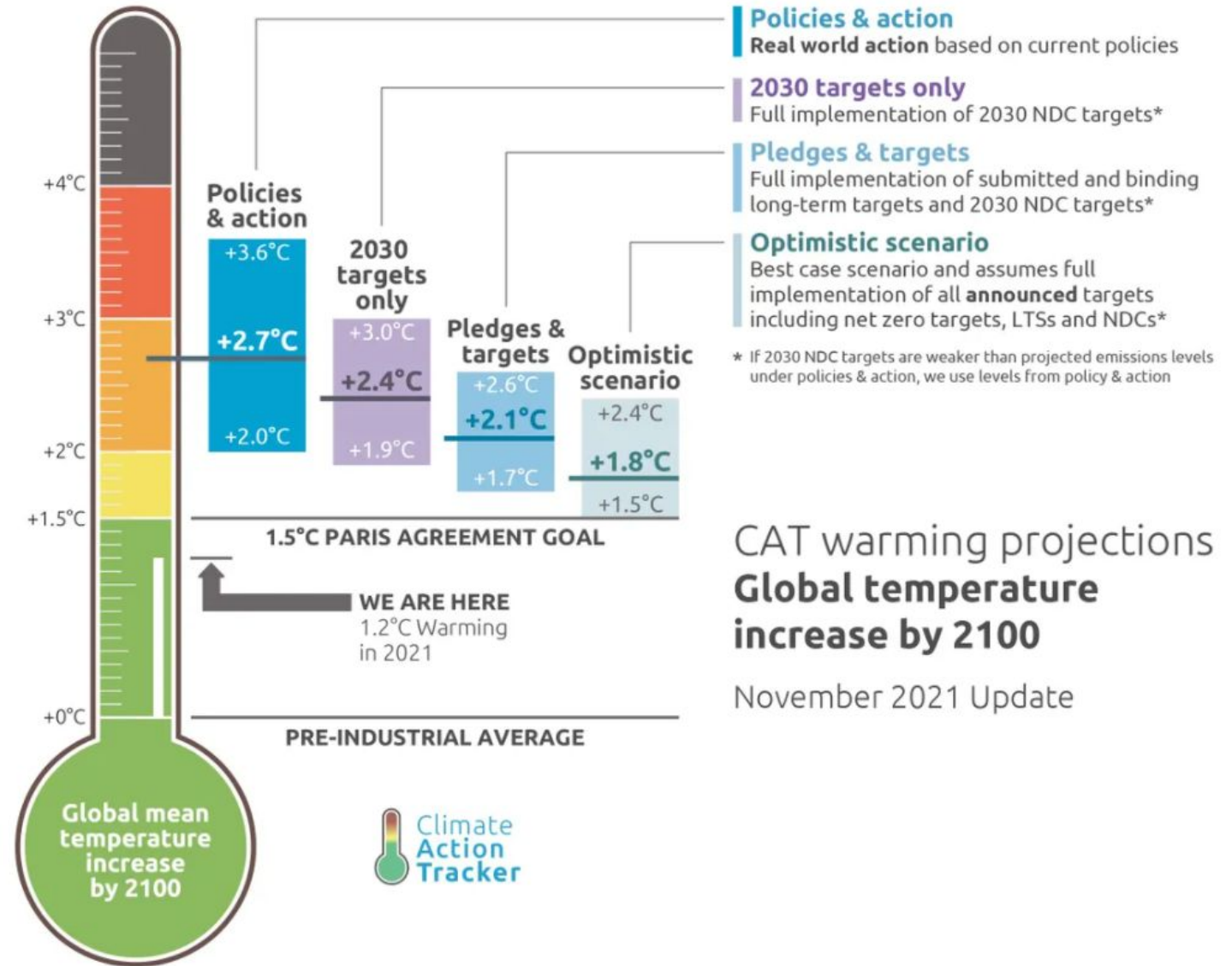
Outline

- Status Post Glasgow
- Extremes Become the Norm
- The Costs of Delay
- Wrap up and Discuss

THE COSTS OF DELAY



Status Post-Glasgow



CAT warming projections
Global temperature increase by 2100

November 2021 Update

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EXTREMES BECOME THE NORM

- Extreme weather is becoming the devastating new normal
- Climate change worsens sea level rise, drought, wildfires, floods, storms, invasive species



EXTREMES BECOME THE NORM

LOCAL EDITION

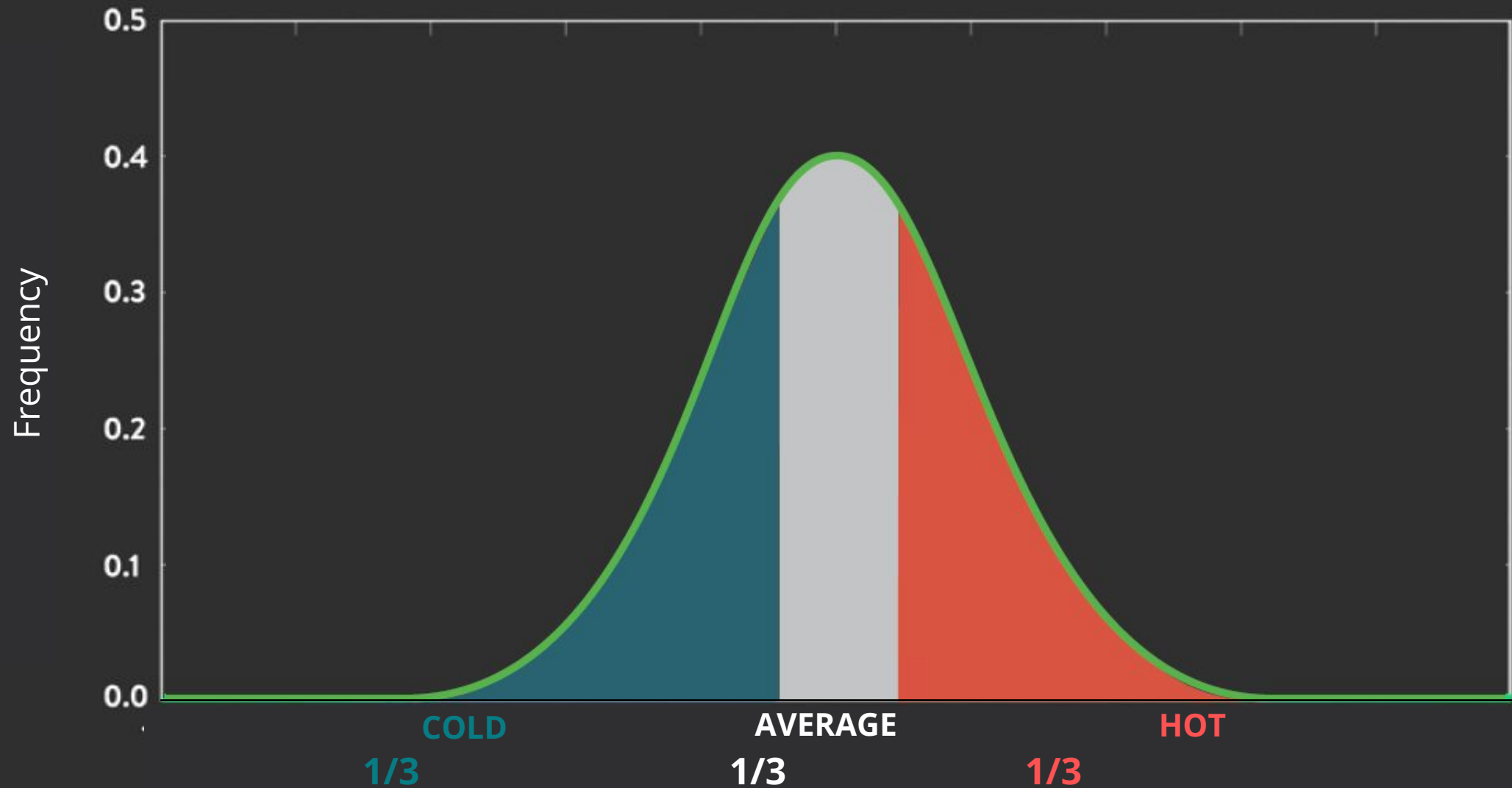
Sacramento, CA recorded two new extremes in October 2021:

- 212 days without rain.
- Most rain in a single day, October 24th.



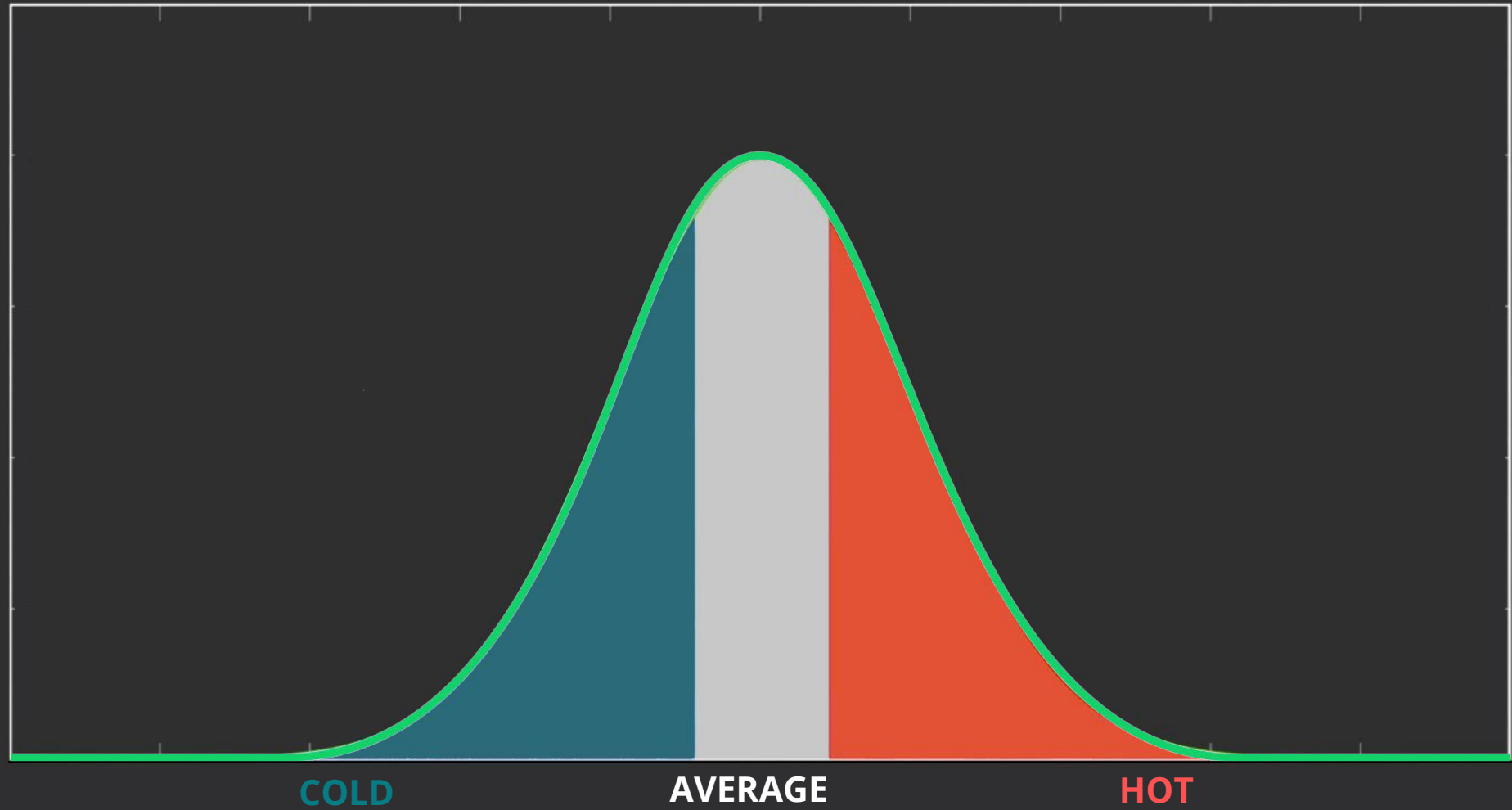
October 24th flooding in Sacramento, CA

INCREASINGLY EXTREME SUMMER TEMPERATURES

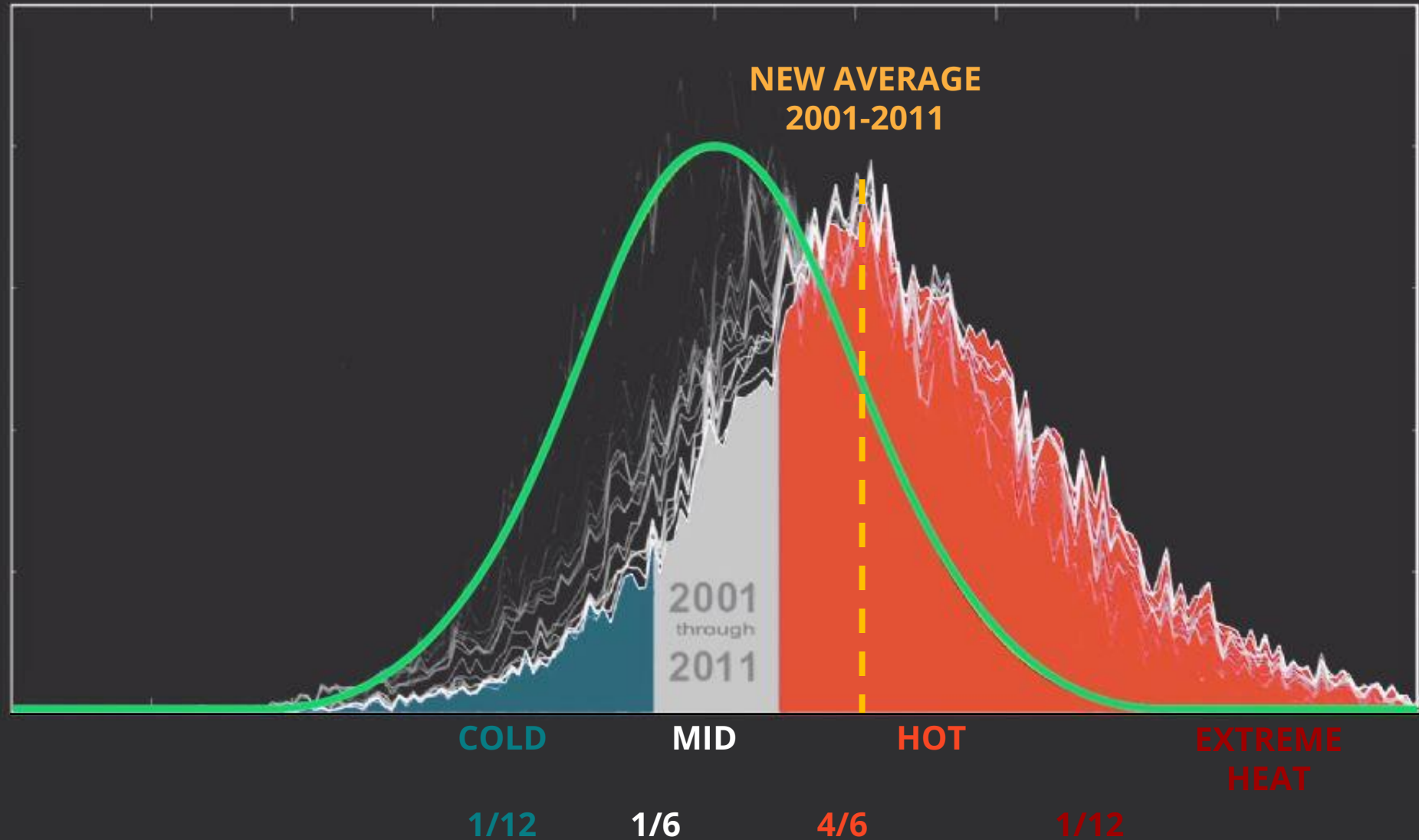


Probability Distribution (1950-1980)

INCREASINGLY EXTREME SUMMER TEMPERATURES



INCREASINGLY EXTREME SUMMER TEMPERATURES



Outline

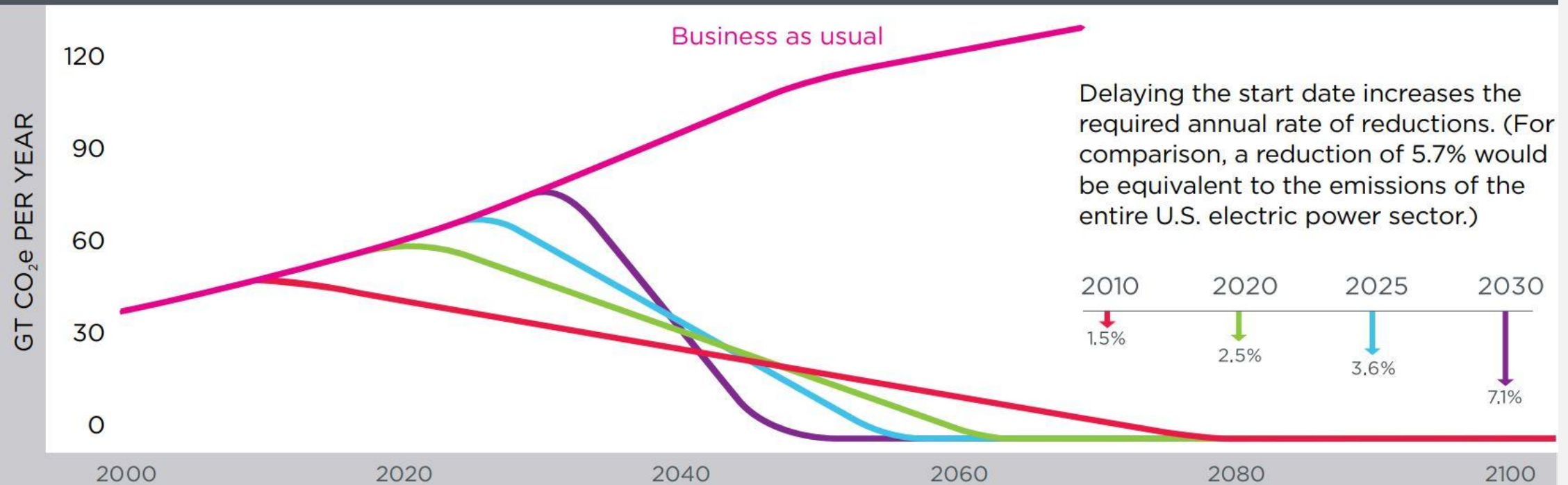
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Cost of delay (1) – a steeper future hill to climb

FIGURE 4: DIFFERENT PATHWAYS TO 450 PPM



Cost of delay (2) –fuel price risk

Continued investment in fossil energy raises fuel price risks

2021-2022 winter residential heat bill outlook compared to last year
(U.S. Energy Information Agency)

Project year-over-year change
in this winter's heat bill

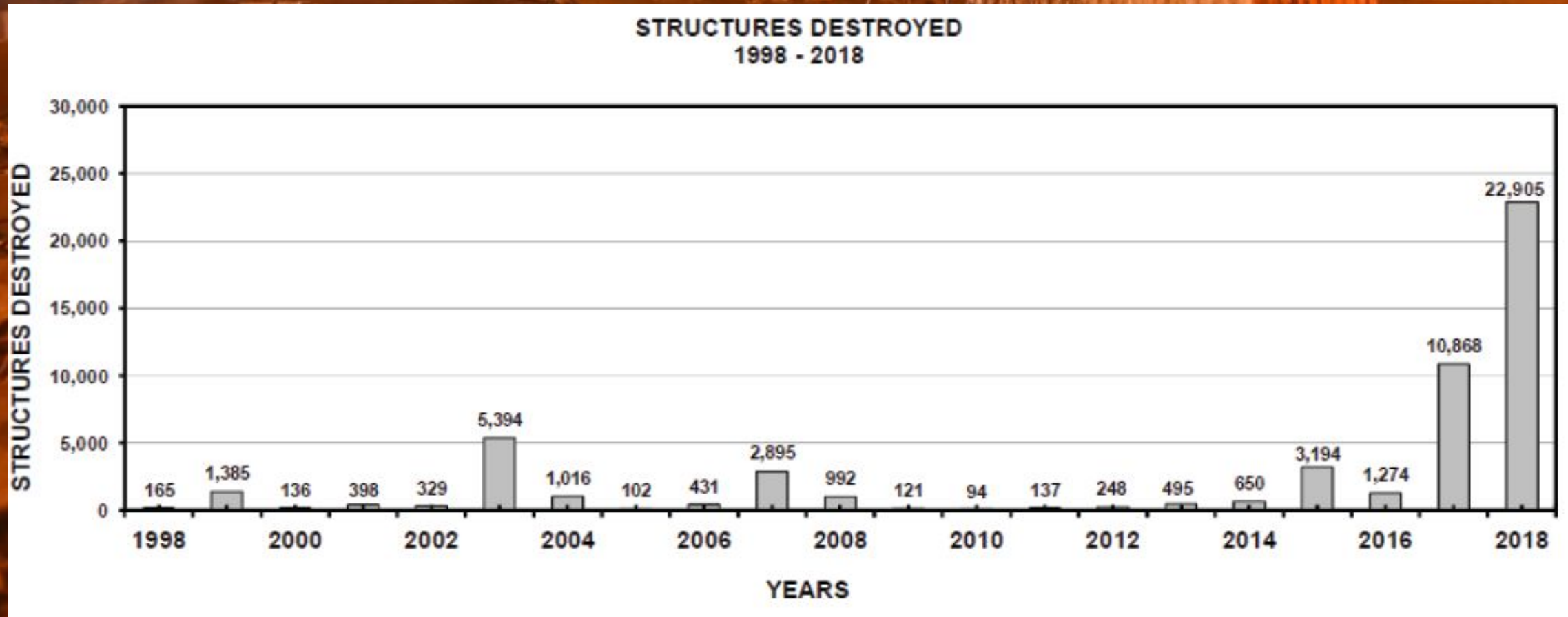
Heating Oil	39%
Natural Gas	29%
Propane*	46%
Electricity	6%

U.S. Coal Hits 12-Year High, Threatening More Energy Inflation

By [Will Wade](#) +Follow

November 15, 2021, 6:29 AM PST *Updated on November 15, 2021, 8:15 AM PST*

Cost of delay (3) – Damage to buildings, infrastructure, agriculture

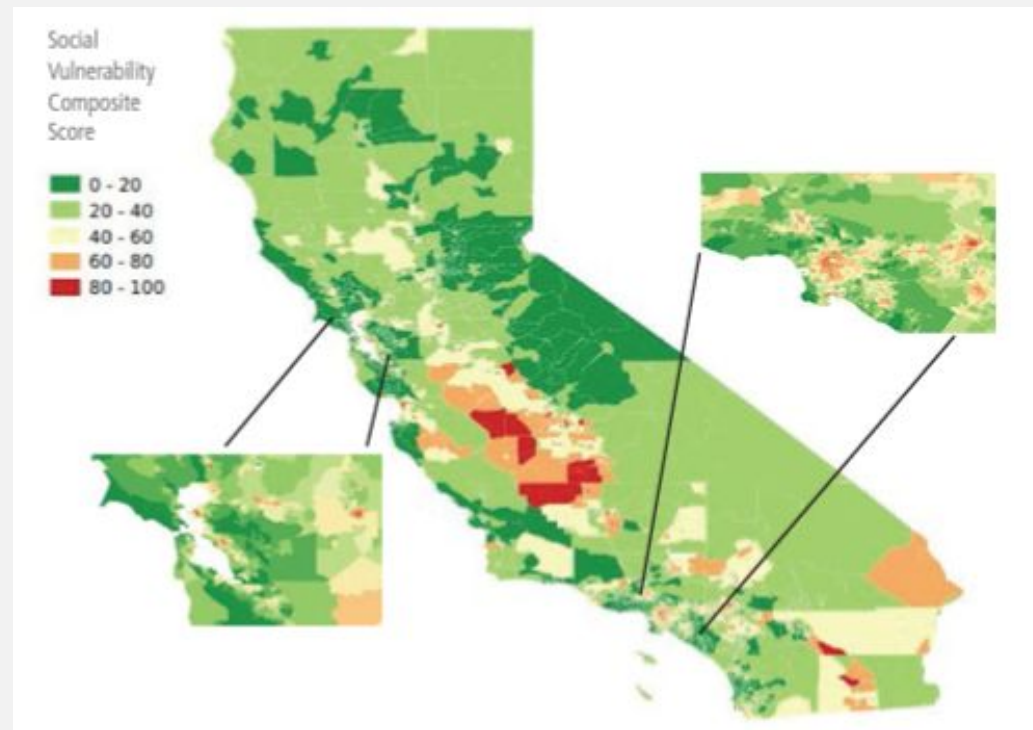


Cost of delay (4) – human suffering

The threat of extreme heat

BY 2050
HEAT WAVES IN CITIES
COULD CAUSE
2-3 TIMES MORE
HEAT-RELATED DEATHS

Vulnerable populations will experience the worst of these effects.



Cost of delay – The likelihood of underestimation

Economic studies typically omit or grossly underestimate the most serious consequences because these risks are difficult to quantify and lie outside of human experience.

“The missing economic risks in assessments of climate change impacts,”
The London School of Economics, 20 Sept 2019

Cost of delay

\$149 Billion Total estimated wildfire damages in 2018

Total \$148.5 (126.1–192.9) billion
~1.5% of California's annual GDP

- \$27.7 billion (19%) in capital losses
- \$32.2 billion (22%) in health costs
- \$88.6 billion (59%) in indirect losses

nature
sustainability

ANALYSIS

<https://doi.org/10.1038/s41893-020-00646-7>

 Check for updates

Economic footprint of California wildfires in 2018

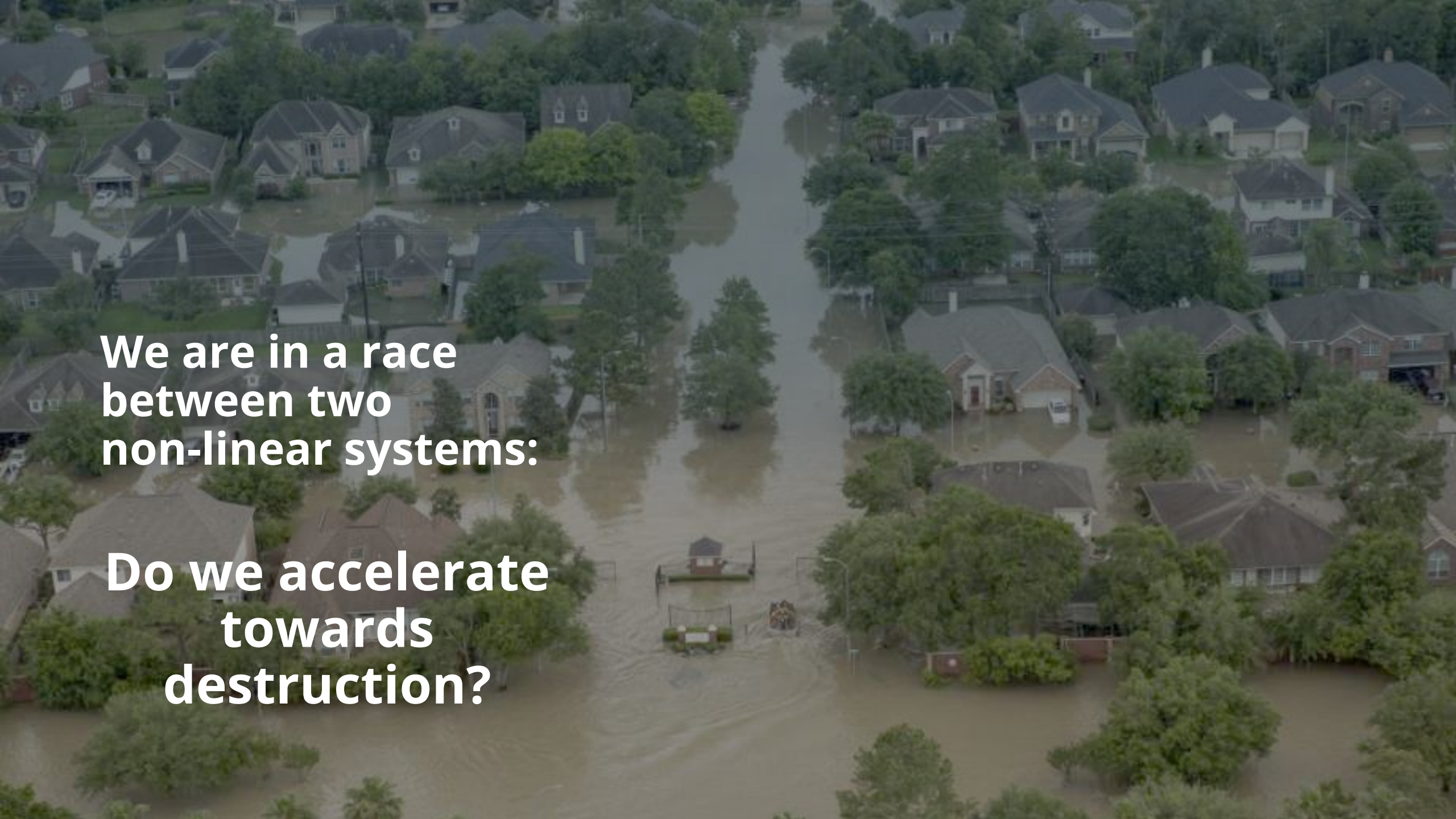
Daoping Wang^{1,9}, Dabo Guan^{2,3,9}✉, Shupeng Zhu⁴, Michael Mac Kinnon⁴, Guannan Geng⁵,
Qiang Zhang², Heran Zheng⁶, Tianyang Lei², Shuai Shao⁷, Peng Gong² and Steven J. Davis⁸

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**We are in a race
between two
non-linear systems:**

**Do we accelerate
towards
destruction?**

An aerial photograph of a vast solar farm in a desert. The solar panels are arranged in neat, parallel rows that stretch across the sandy landscape. The perspective is from a high angle, looking down at the panels, which are tilted towards the sun. The shadows of the panels are cast onto the ground, indicating the sun is at an angle. The overall scene conveys a sense of large-scale renewable energy production.

Or low-carbon prosperity?



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