

# CENTERING SHORT-LIVED CLIMATE POLLUTANTS IN CLIMATE ACTION STRATEGY



**Courtney Pineau**  
Climate Collaborative  
Moderator



**Kiff Gallagher**  
Global Heat Reduction Initiative (GHR)



**Claire Loudis**  
Lotus Foods



**Caitlin Leibert**  
Amazon Worldwide Grocery



## TIME

CO<sub>2</sub>e is a 100-yr metric (GWP100) aiming for a 24-yr target  
CO<sub>2</sub>e tonnes have different global heat effects over near-and long-term time



\*To keep global warming to no more than 1.5°C – as called for in the Paris Agreement – emissions need to be reduced by 45% by 2030 and reach net zero by 2050.

# HEAT

## CO<sub>2</sub>e undervalues fast-acting, super heat-driving pollutants

### Undervalues fast-acting GHGs

Methane

### Atmospheric Lifespan

10-12 years

### Warming Potency while in the atmosphere (vs CO<sub>2</sub>)

Up to **150 x**

HFCs\*

14 years

Up to **5,400 x**

### Overlooks potent aerosols

Black Carbon (soot)

4-12 days

Up to **52,000 x**

Low-Level Ozone (smog)

Days to weeks

Up to **1,200 x**

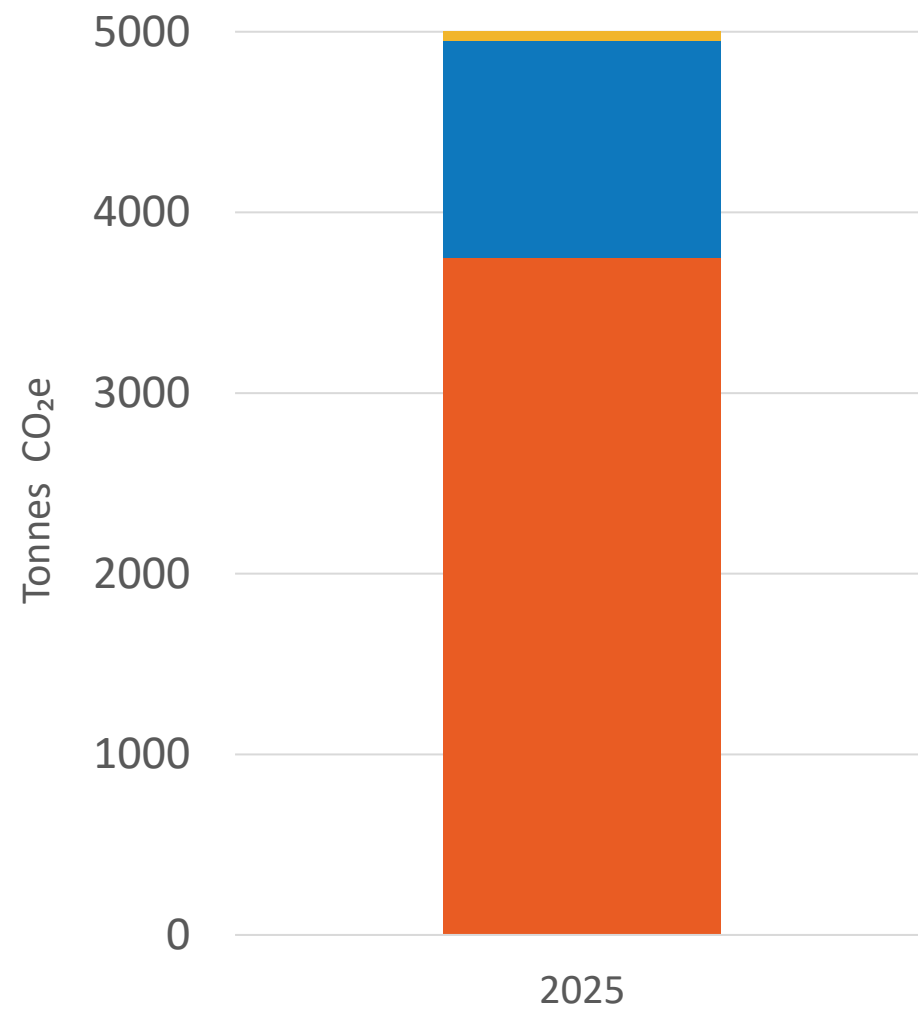
### GWP100 values:

- Methane 27 to 30
- Low-level ozone 1,000 to 2,000
- HFC-134a 1,530
- Black carbon 830

\*Based on HFC-134a, one of the most commonly used HFCs.

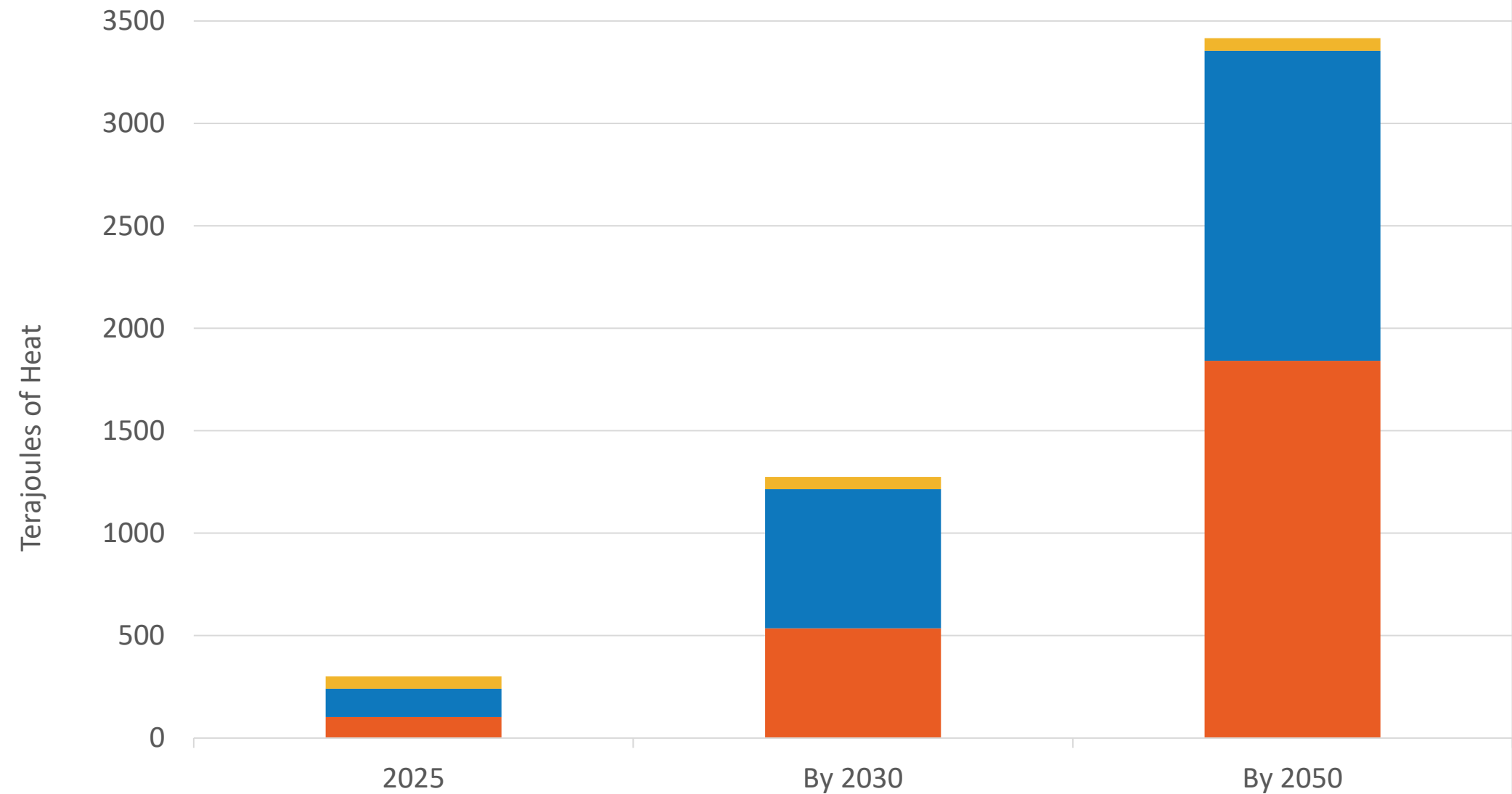
# Carbon Footprint → Heat Print

## Expanded Carbon Footprint (CO<sub>2</sub>e)



*This footprint is primarily CO<sub>2</sub> emissions. We expand it with PM2.5 (soot and smog) which is not included in carbon footprints.*

## Heat Print Over Critical Near-Term Timeframes

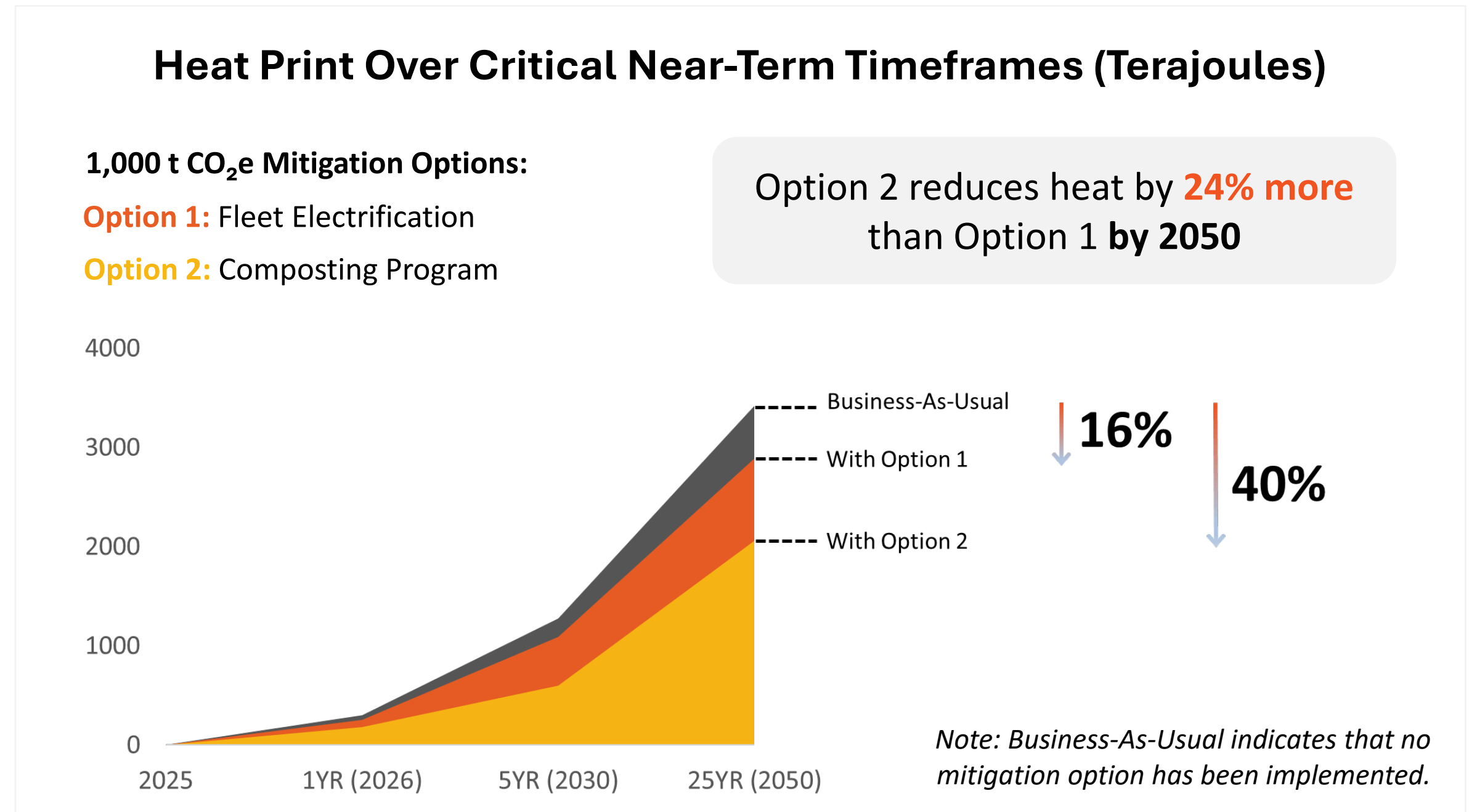
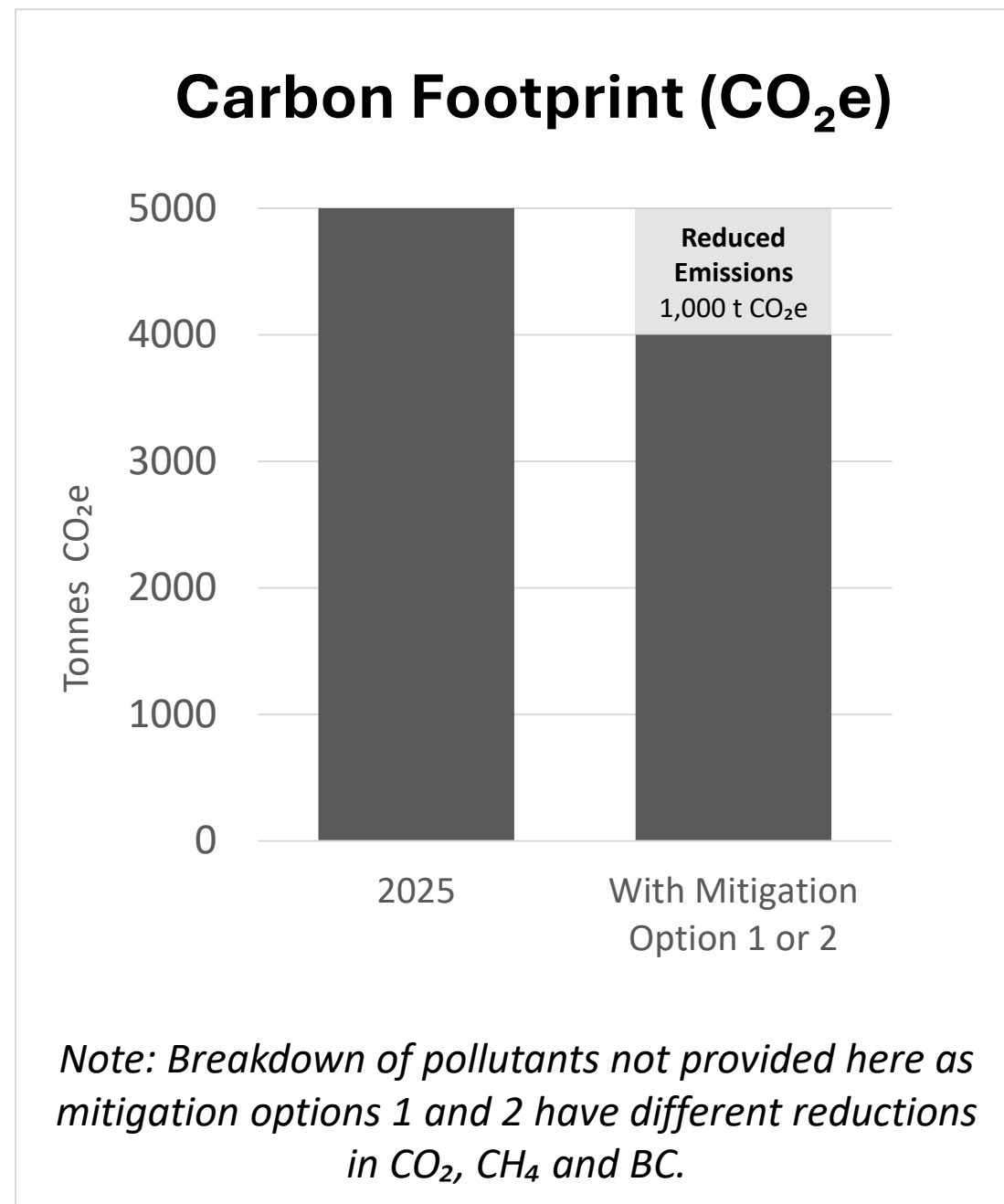


*New data reveals that methane and black carbon, undervalued and overlooked in the carbon footprint, are major drivers near-term of heat and pollution.*

Carbon Dioxide Methane Black Carbon

# CO<sub>2</sub>e tonnes reduced vs heat reduced

Prioritize mitigation investments for optimal heat and pollution reduction



# Case Study: Napa Recycling and Waste Services (NRWS)

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## Step 1

**Quantified** GHG emissions associated with NRWS' 2024 operations

## Step 2

**Generated** NRWS' 2024 total heat profile over near- and long-term timeframes

## Step 3

**Prioritized** mitigation strategies by climate return per dollar

*“Kelley said the analysis made him realize that it may be **better to tackle composting operations emissions** before other projects, such as electrifying vehicles that run on natural gas.”*

– Trellis article, 22 April 2025

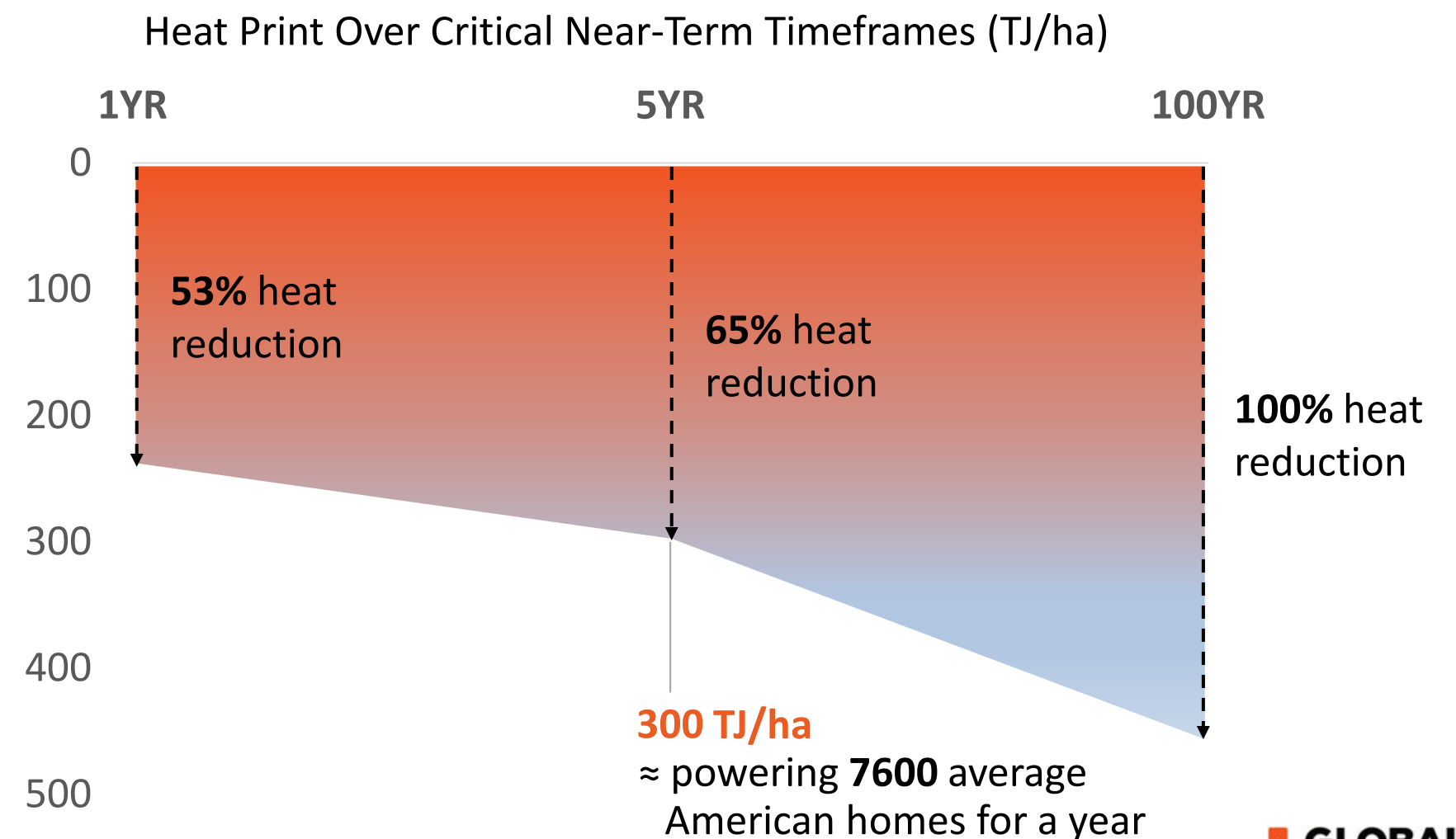
# Assessing Heat Reduction Impact

## Avoided Burning of Rice Crop Residues in Thailand

**1** In the first year, black carbon is responsible for **94% of the heat impact** of rice residue burning

**2** Crop residue burning releases **PM2.5** – a leading environmental killer and global heat driver

**3** **65% of the atmospheric heat** that results from rice residue burning **occurs in the first five years**





**Khun Nitiroj, Organic Rice Farmer  
Fang District, Thailand**



**Lotus Foods SRI trial  
planted in Fang District,  
Thailand**



**Abhi Agarwal and Avika  
Narula, Living Roots  
Chiang Mai, Thailand**