

**Climate
Change
& the
Built
Environment**

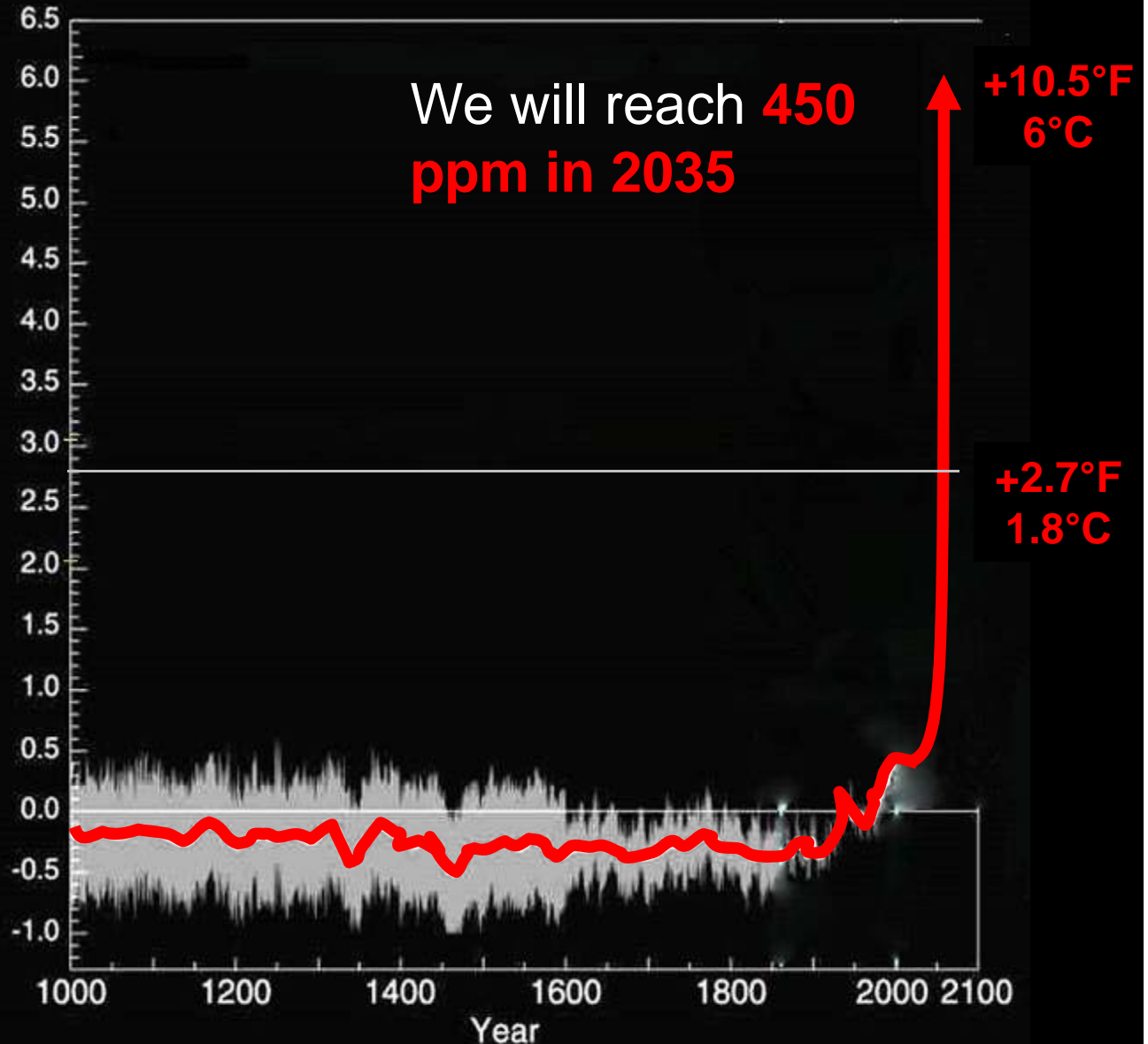


Earth's Surface Temperature

We are at **385 ppm**

Increasing at
+2.5 ppm
annually

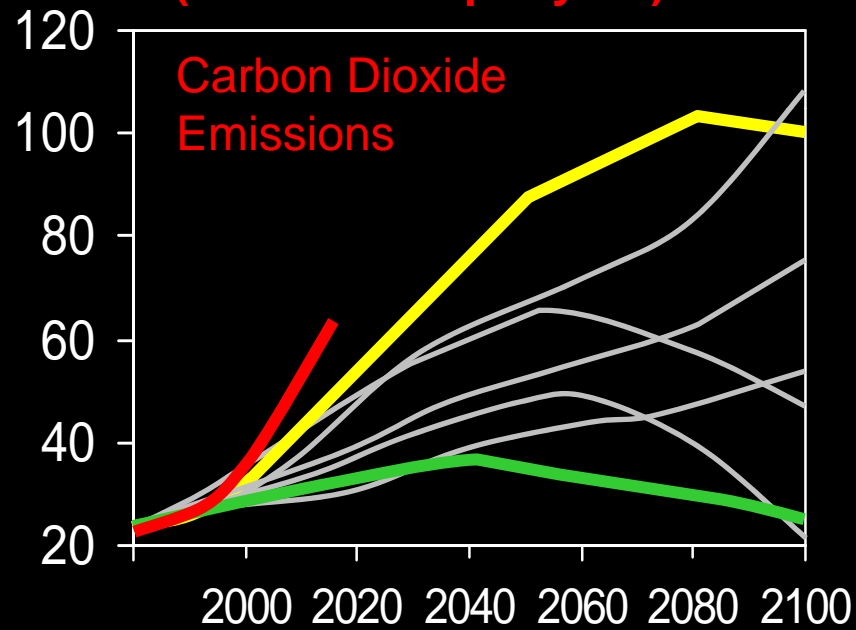
At **450 ppm** CO₂
“we will trigger
potentially
irreversible glacial
melt & sea level rise
out of humanity’s
control”



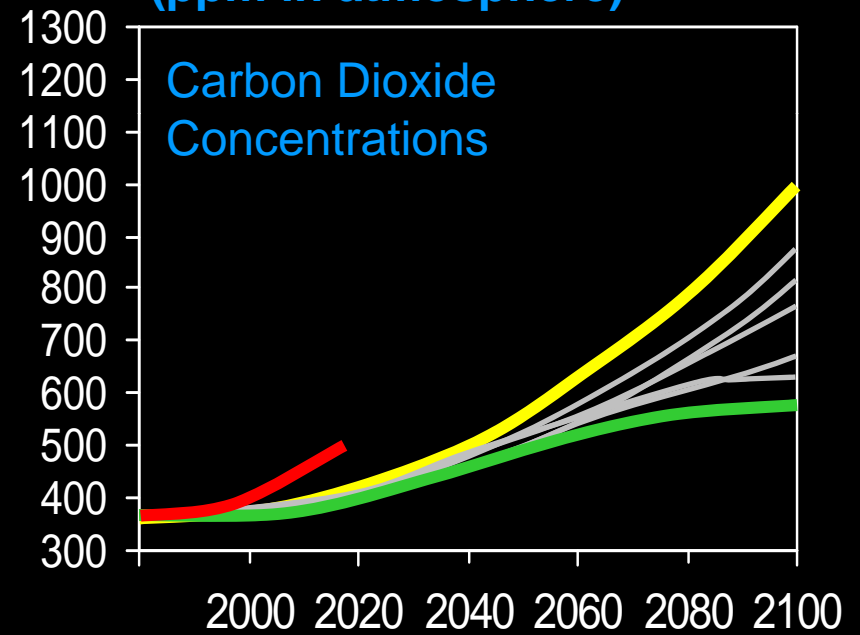
Source: UN Intergovernmental Panel on Climate Change (IPCC)

As CO2 increases...

**CO2 Emissions
(Billion tons per year)**



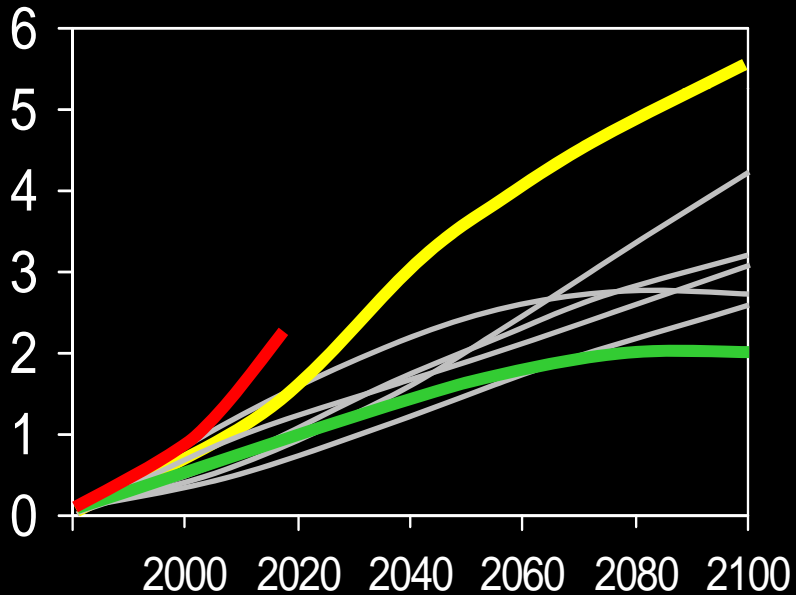
**CO2 Concentration
(ppm in atmosphere)**



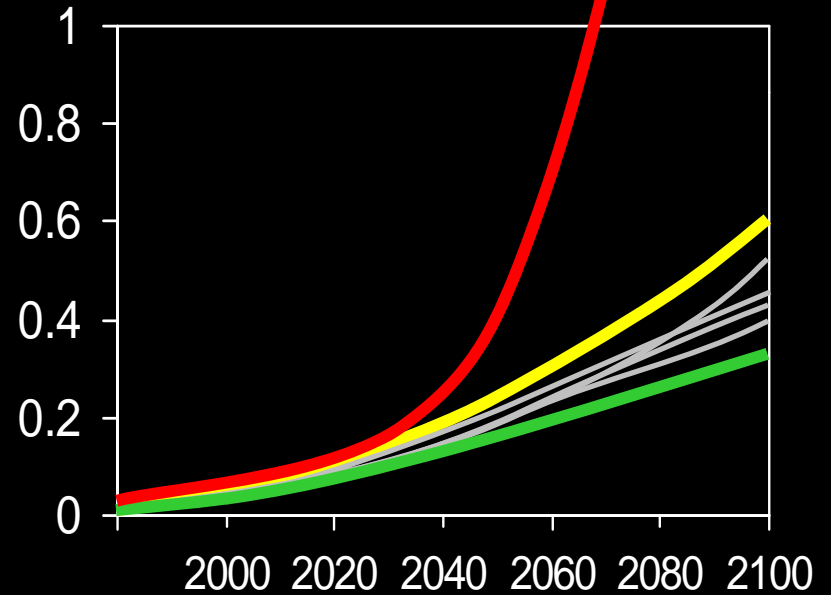
Temperature & sea-level rise...

Greenland 5m

Temperature Change C°

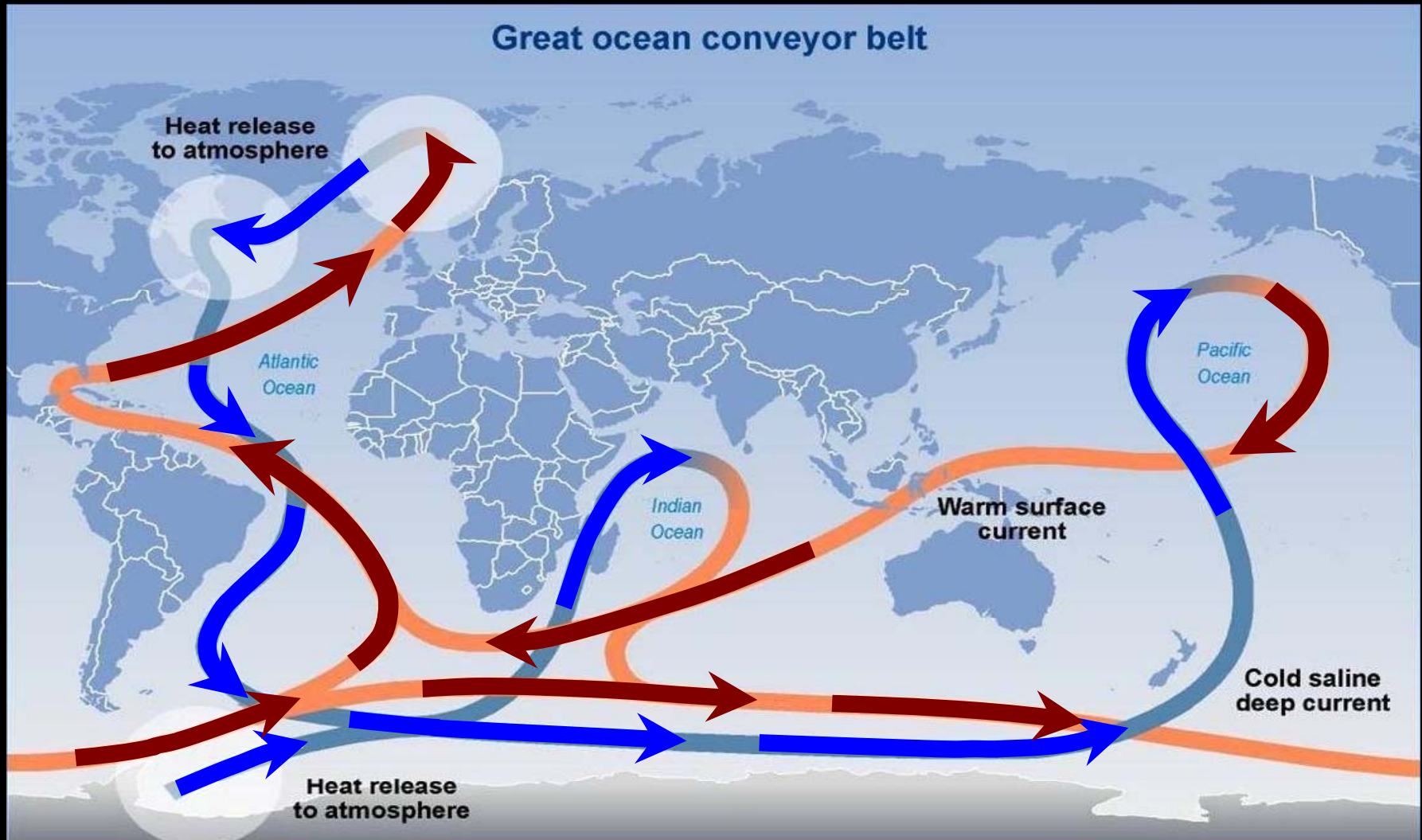


Sea Level Rise meters (m)



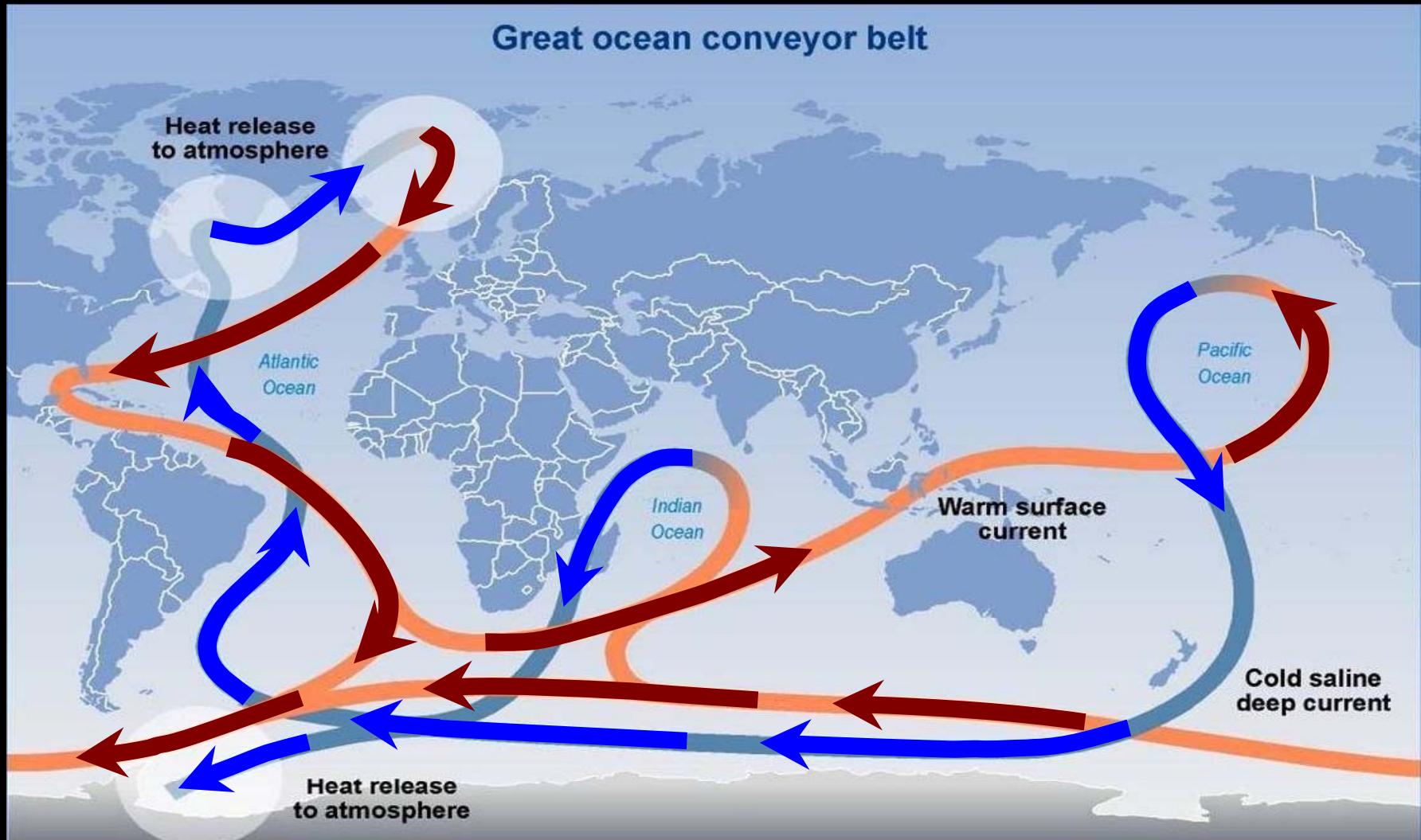
Source: UN Intergovernmental Panel on Climate Change (IPCC)

... threatening the ocean conveyor belt



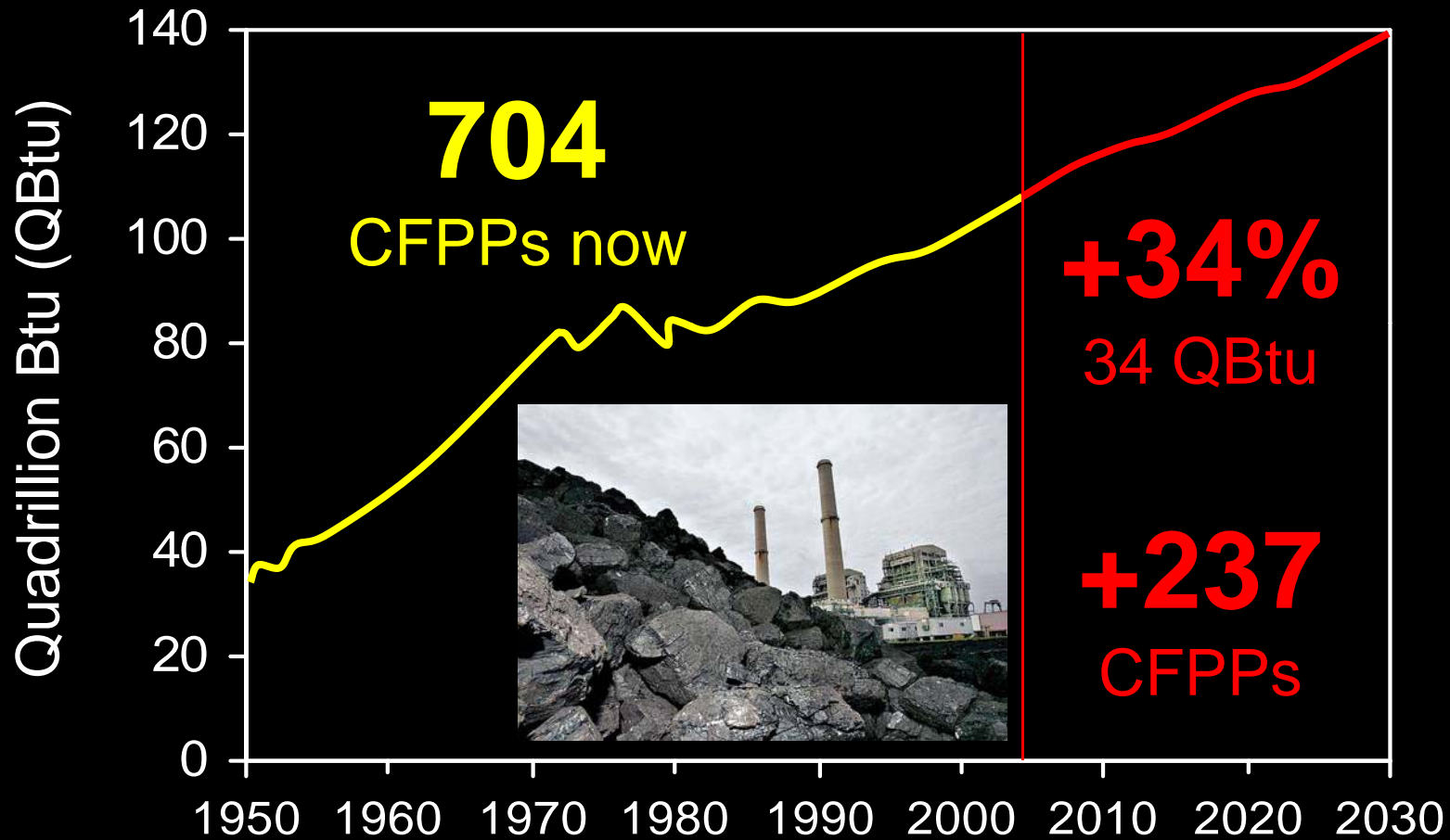
Source: UN Intergovernmental Panel on Climate Change (IPCC)

... threatening the ocean conveyor belt



Source: UN Intergovernmental Panel on Climate Change (IPCC)

U.S. Energy Consumption





750,000 Toyota Prius
drivers save 2.35M MT of
CO₂ per year

1 CFPP in 1 year



Sources: U.S. EPA, Toyota, CalStar analysis



Regional Greenhouse Gas Initiative NY, ME, VT, NH, MA, CT, RI, PA, NJ, DE, MD reducing CO₂ emissions to 1990 levels by 2014... .

13 CFPPs in 1 year

Source: Architecture 2030





Wal-Mart investing \$500M in
7 years to reduce energy &
CO₂ by 20%

1 CFPP in 1 month





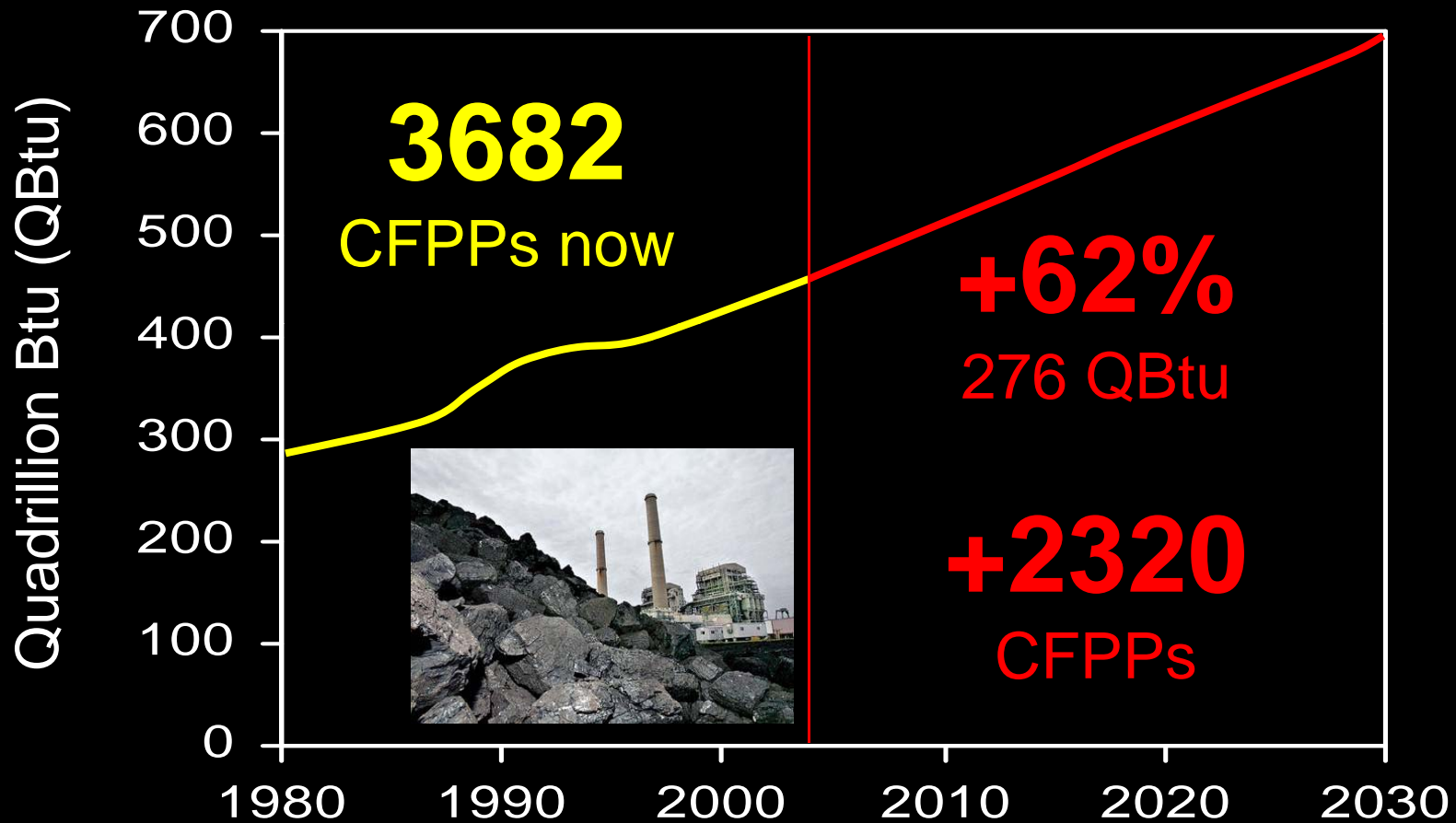
Home Depot planting
300,000 trees to absorb
CO₂...

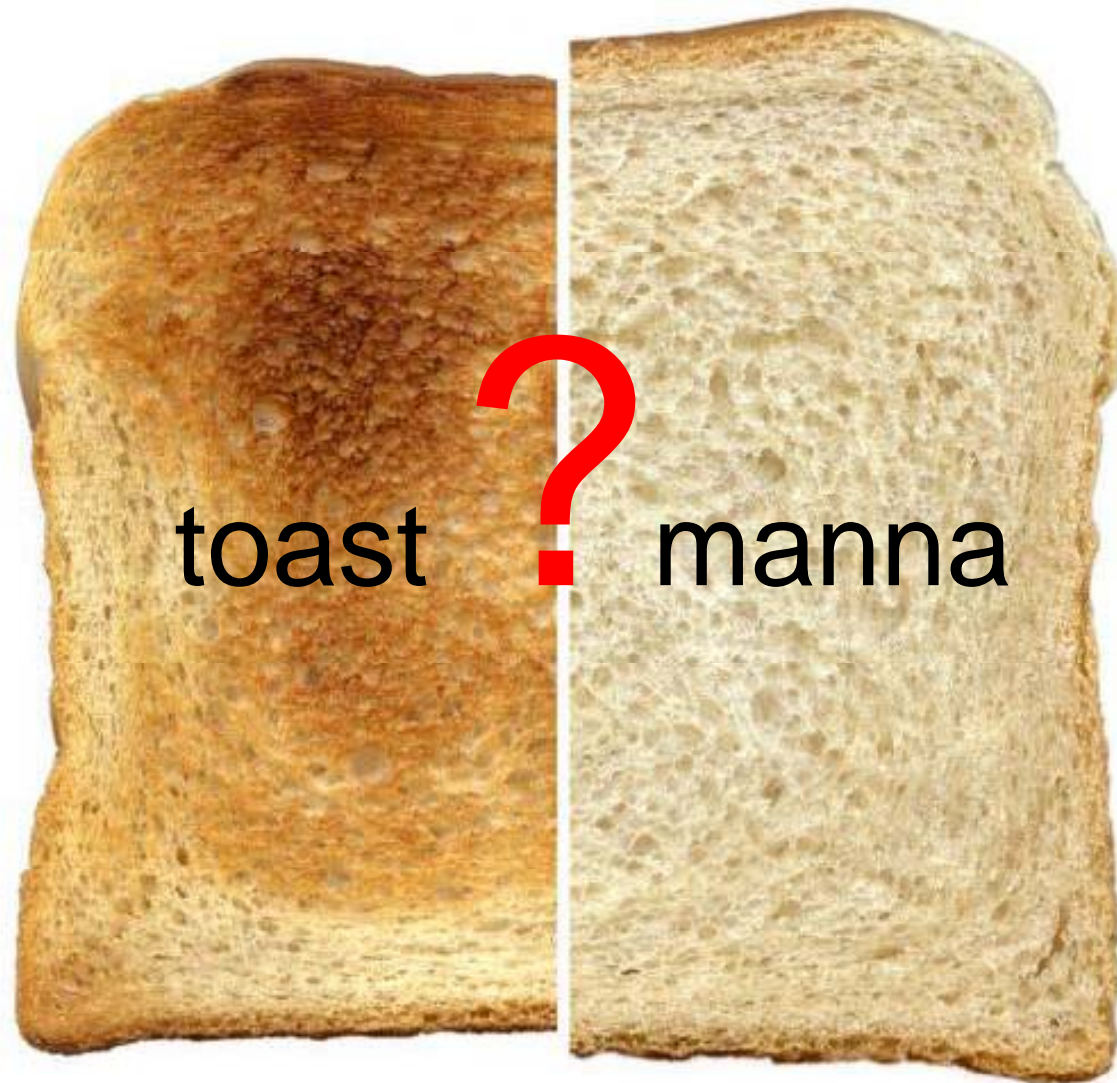
1 CFPP in 10 days

Source: Architecture 2030



World Energy Demand

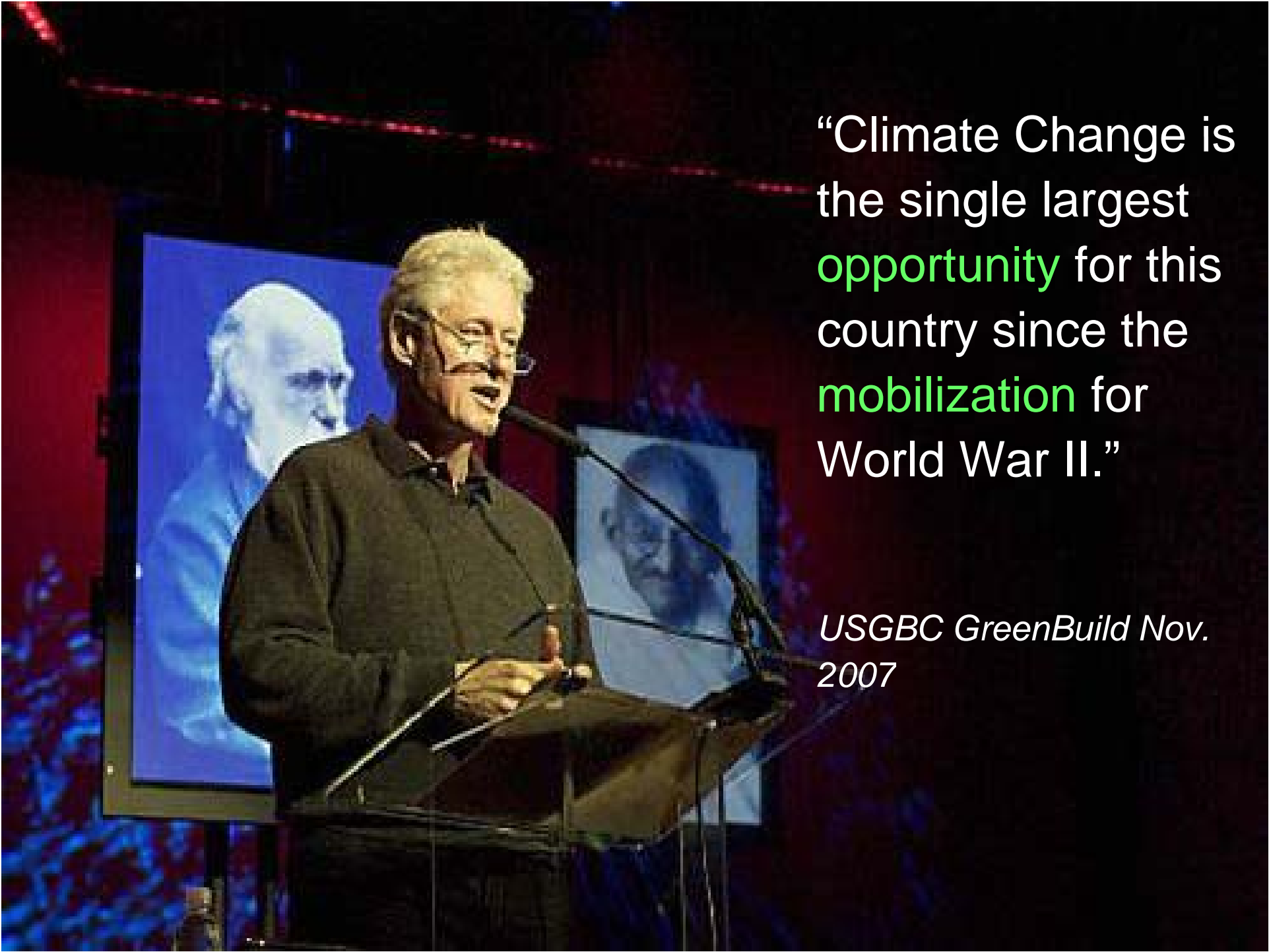




toast



manna

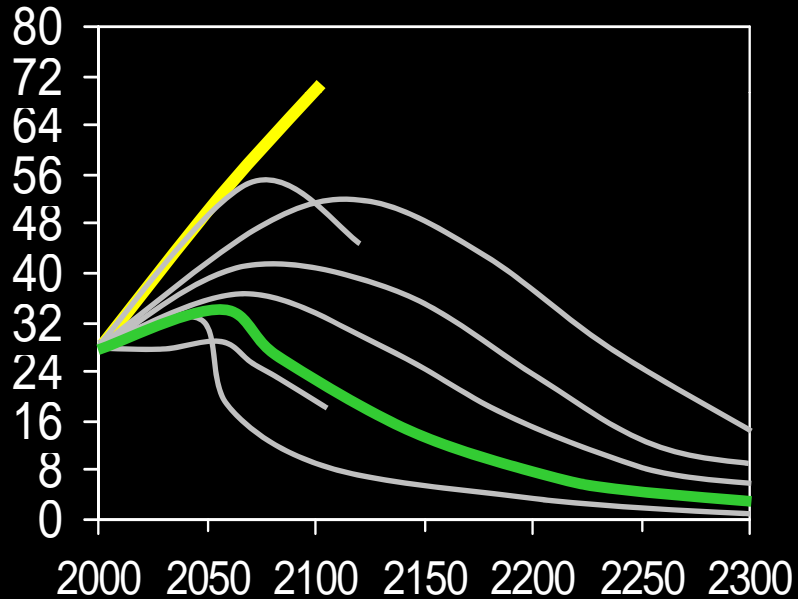
A man with short, light-colored hair, glasses, and a mustache is speaking at a podium. He is wearing a dark, long-sleeved shirt. The podium has a microphone and some papers. Behind him, there are two large screens displaying portraits of men. The background is dark with some blue and red lighting. The overall scene appears to be a formal event or conference.

“Climate Change is the single largest **opportunity** for this country since the **mobilization** for World War II.”

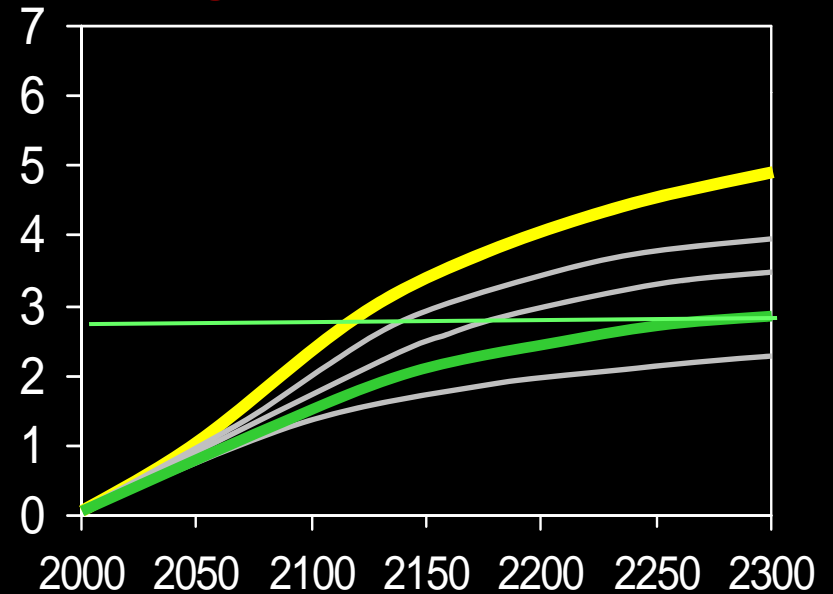
USGBC GreenBuild Nov. 2007

Agreed: We Must Mitigate

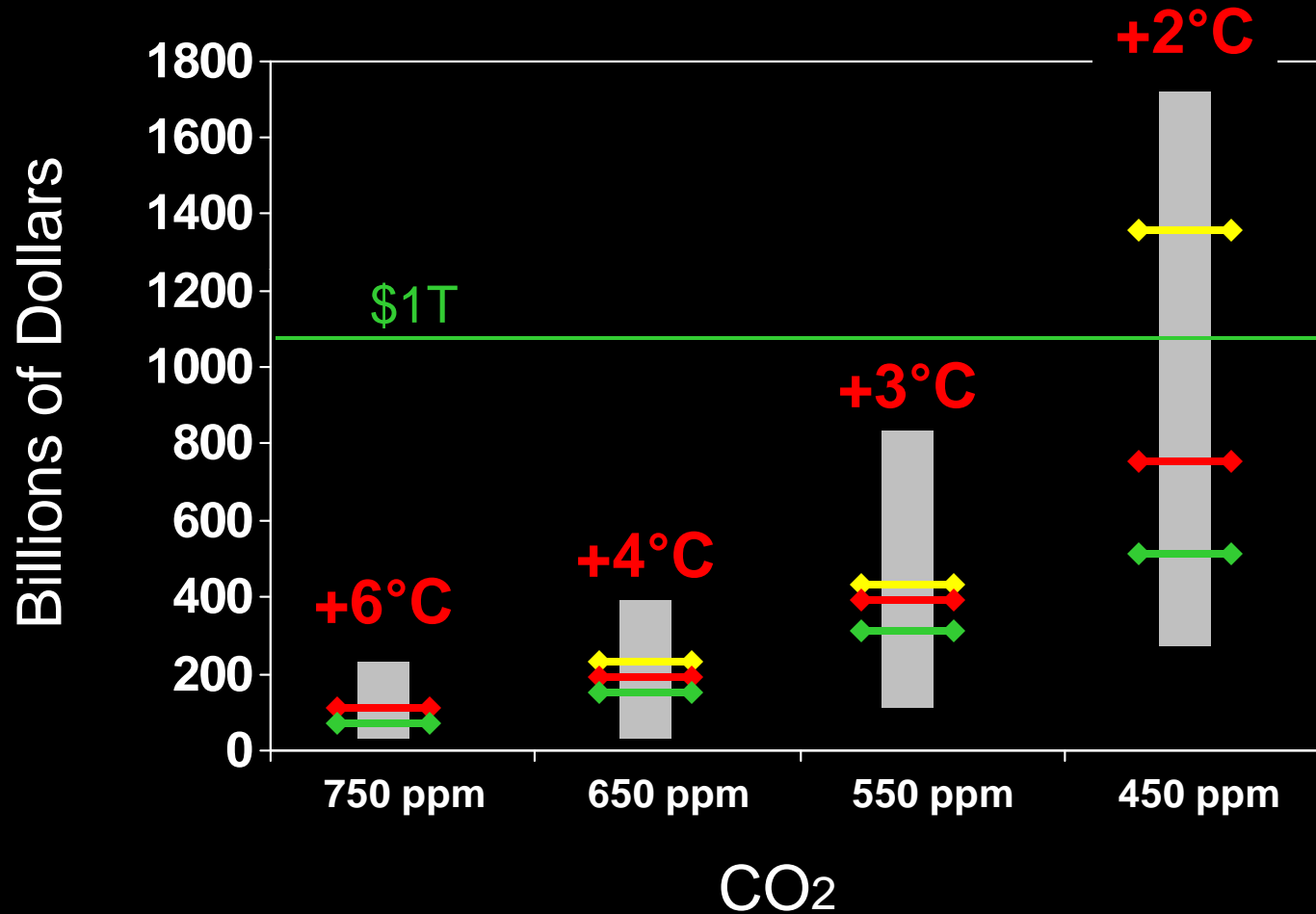
**CO₂ emission
(Billion tons CO₂)**



**Global temperature
change (°C)**



\$1+ Trillion/Year Needed



Source: UN Intergovernmental Panel on Climate Change (IPCC)

Green is the New Red, White & Blue

Alcan
Alcoa
American International Group
Boston Scientific Corporation
BP America
Caterpillar
Chrysler
ConocoPhillips
Deere & Company
Dow Chemical
Duke Energy
DuPont
Environmental Defense
Exelon Corporation
Ford Motor Company
FPL Group.



The Built Environment



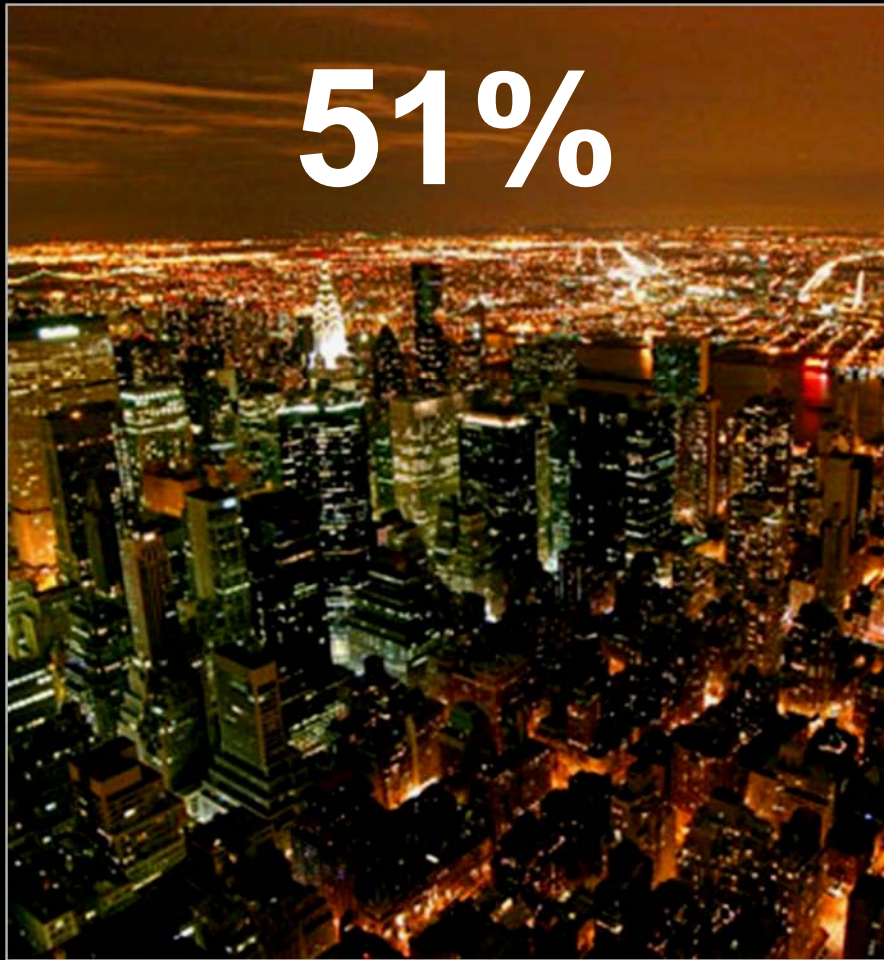
The Built Environment

An aerial night photograph of a city, likely New York City, showing a dense urban landscape with numerous lit-up buildings and streets. The sky is dark, and the city lights create a warm, golden glow. Two white-bordered boxes are overlaid on the image, each containing a statistic. The left box is positioned over a cluster of skyscrapers, and the right box is positioned over a more densely packed area of buildings.

51%
Total U.S.
energy

55%
Total U.S.
CO₂

U.S. Energy Demand



51%

Built Environment



27%

Transport



22%

Industry

U.S. Energy



Built Environment 51%

**Residential
22%**



**Commercial
17%**

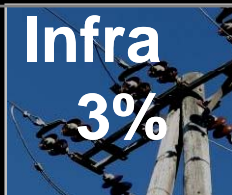


Operations 39%

**Buildings
9%**



**Infra
3%**



Materials 12%

Half of USA Electricity from Coal

**Building Operations 76% of
USA electricity**



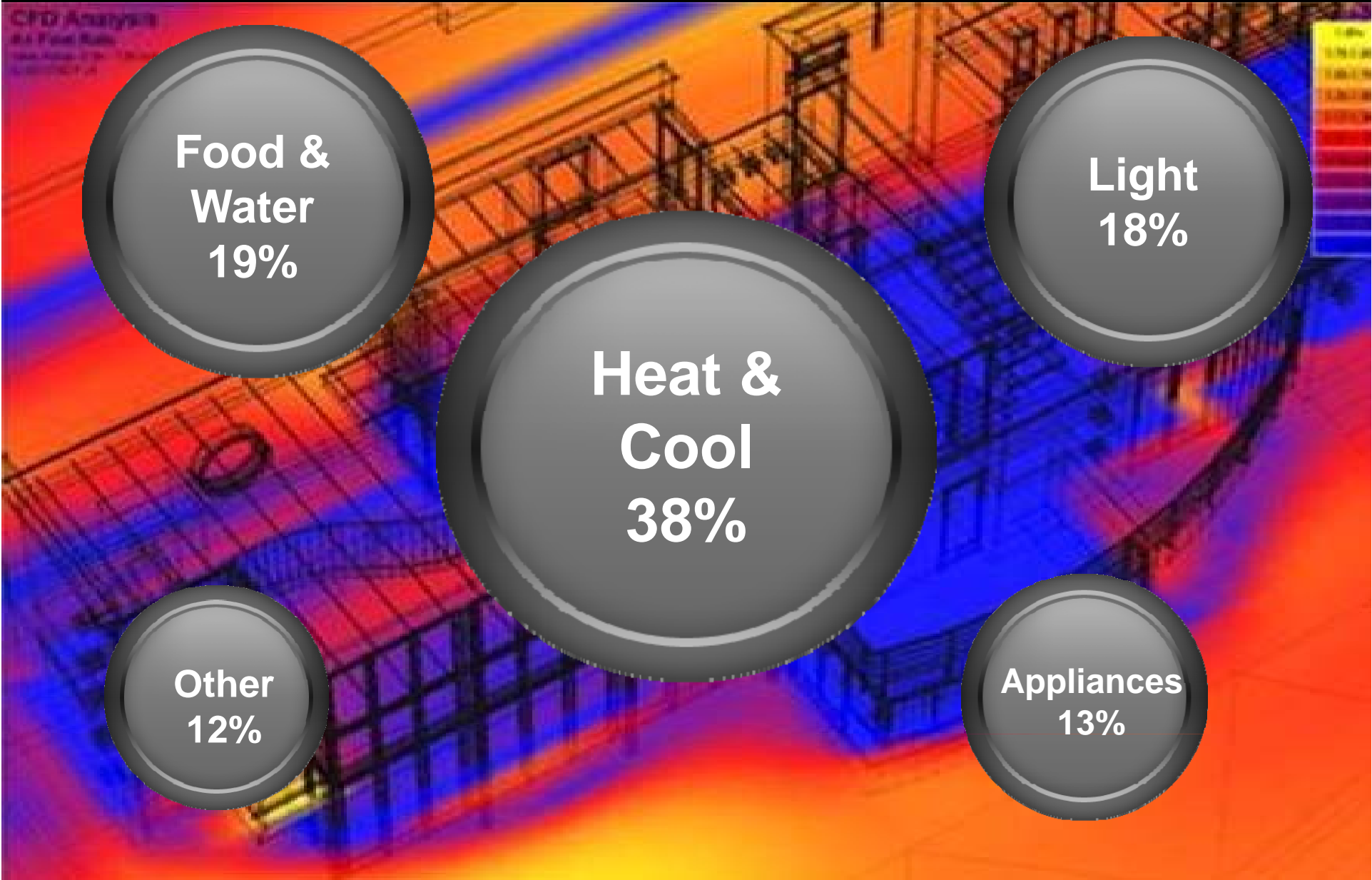
**Industrial
23%**



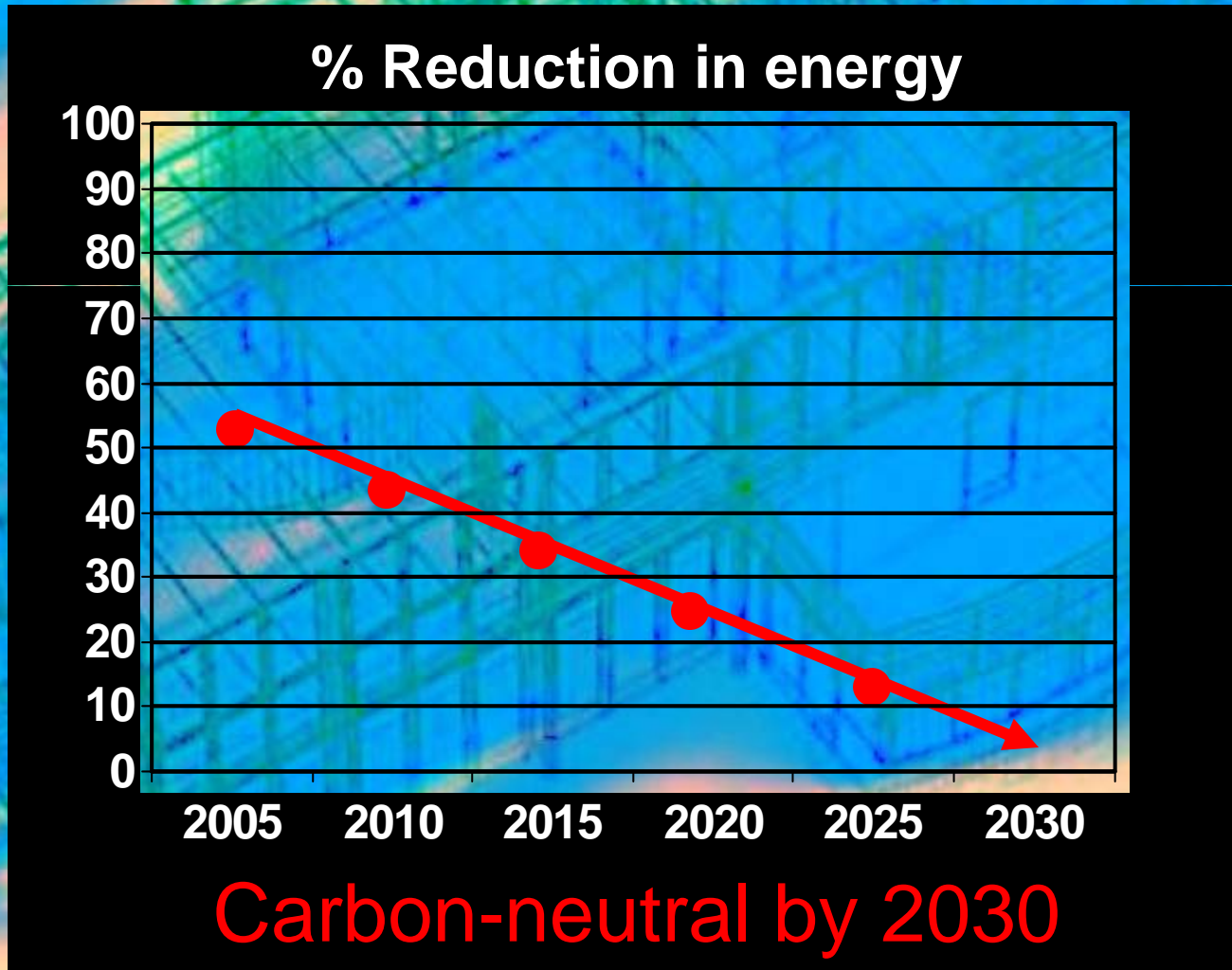
Transportation 1%



The Problem

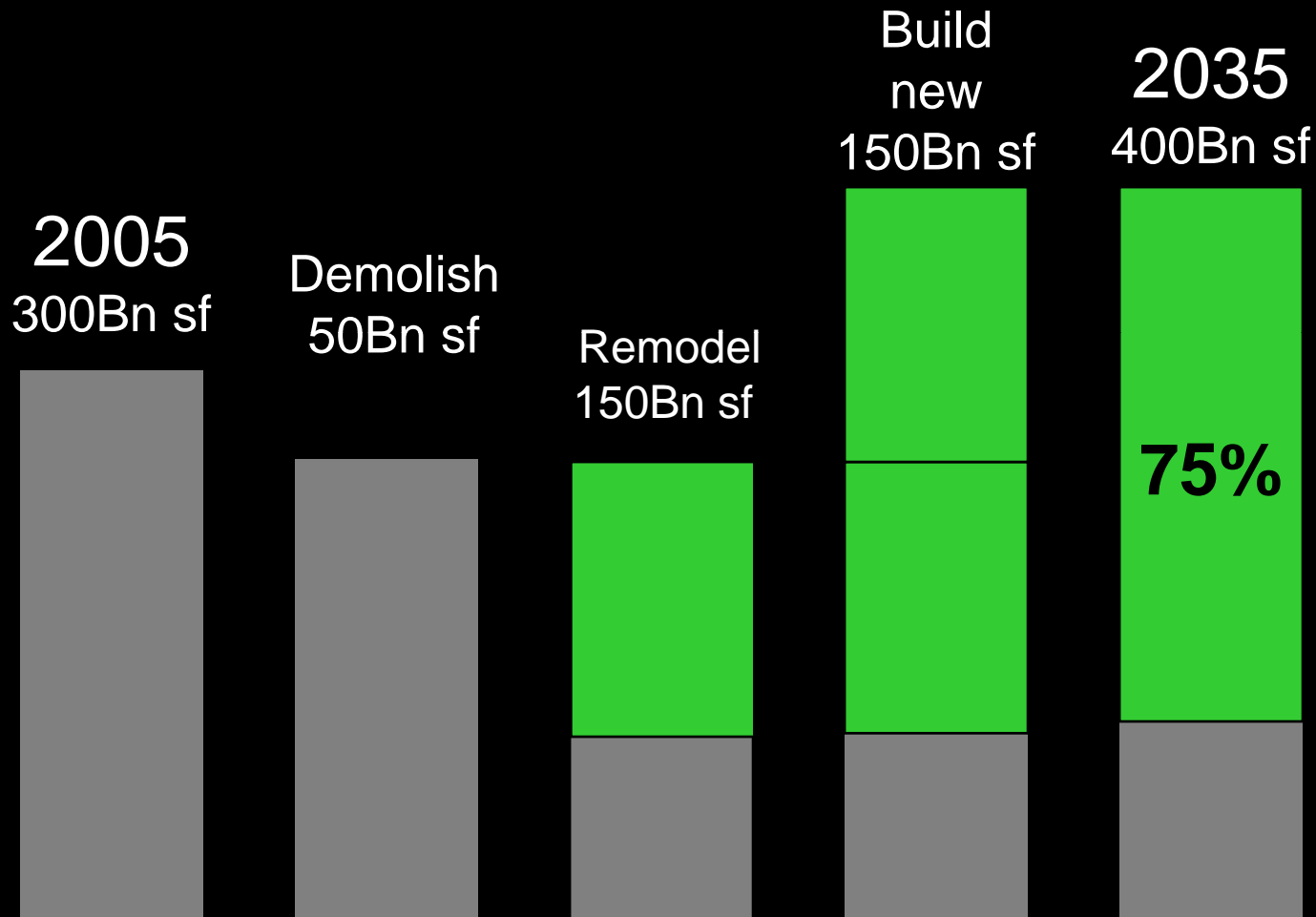


2030 °C Challenge



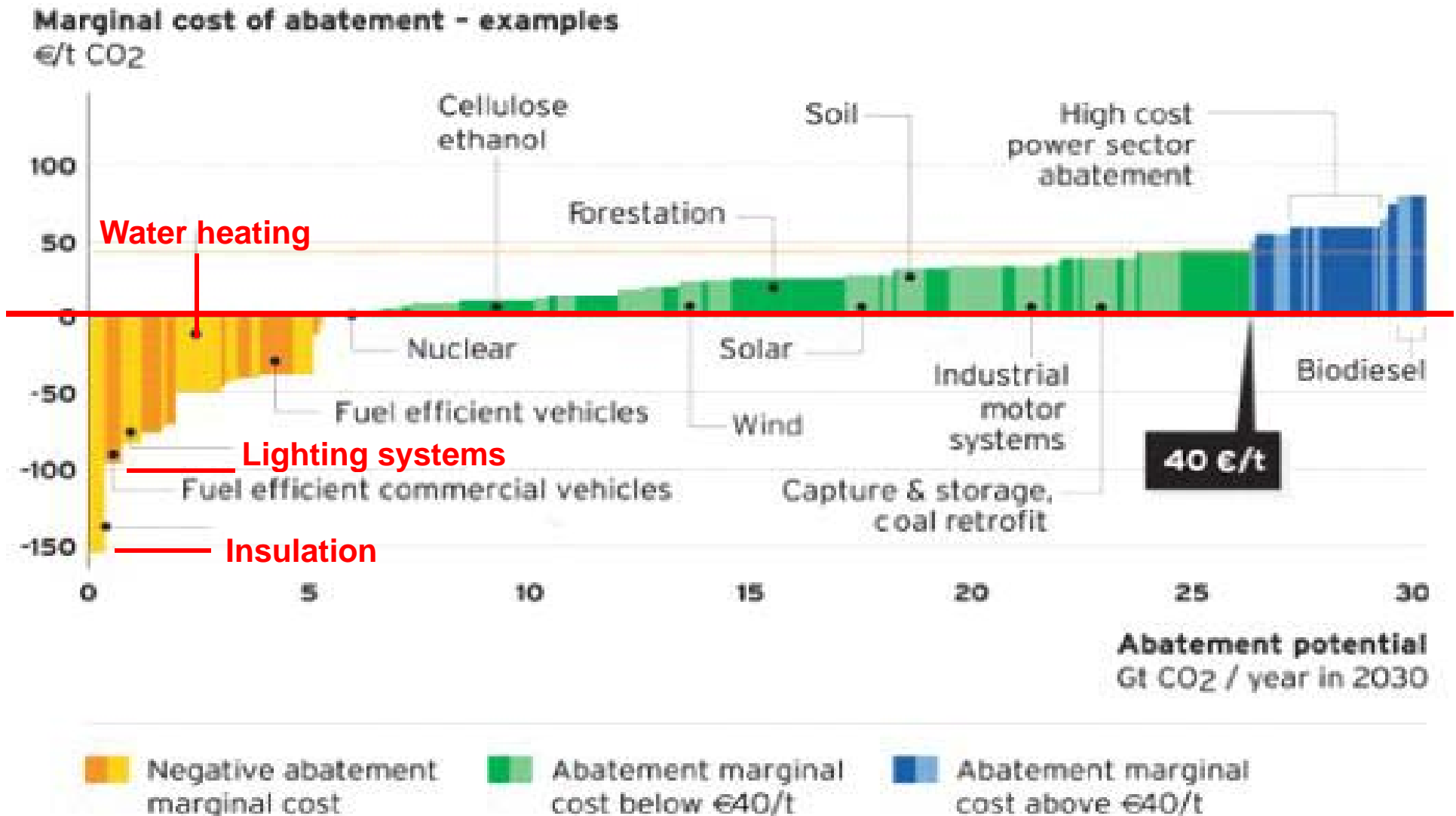
Source: Ed Mazria, 2030 Challenge

Turnover 75% by 2035



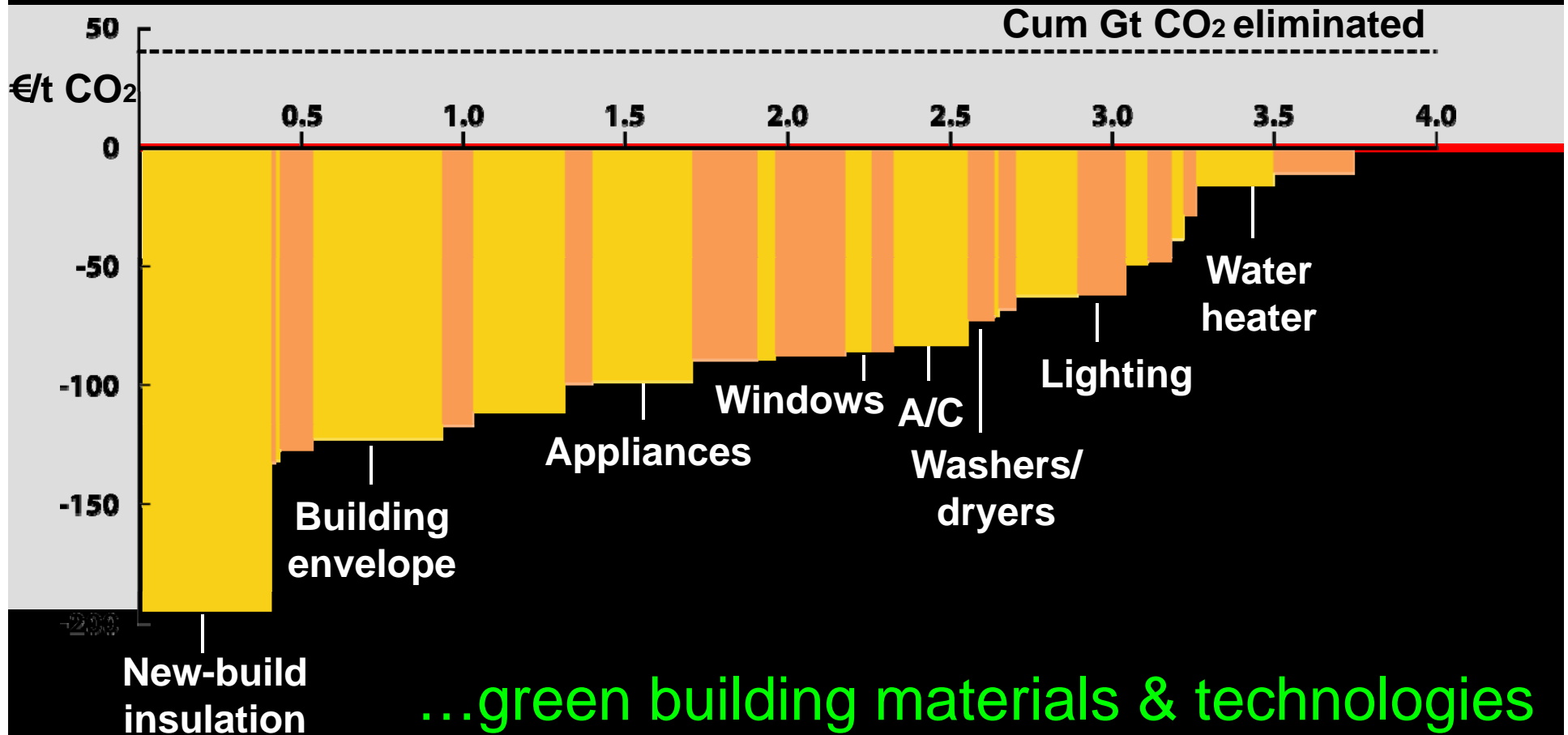
U.S. Building Inventory

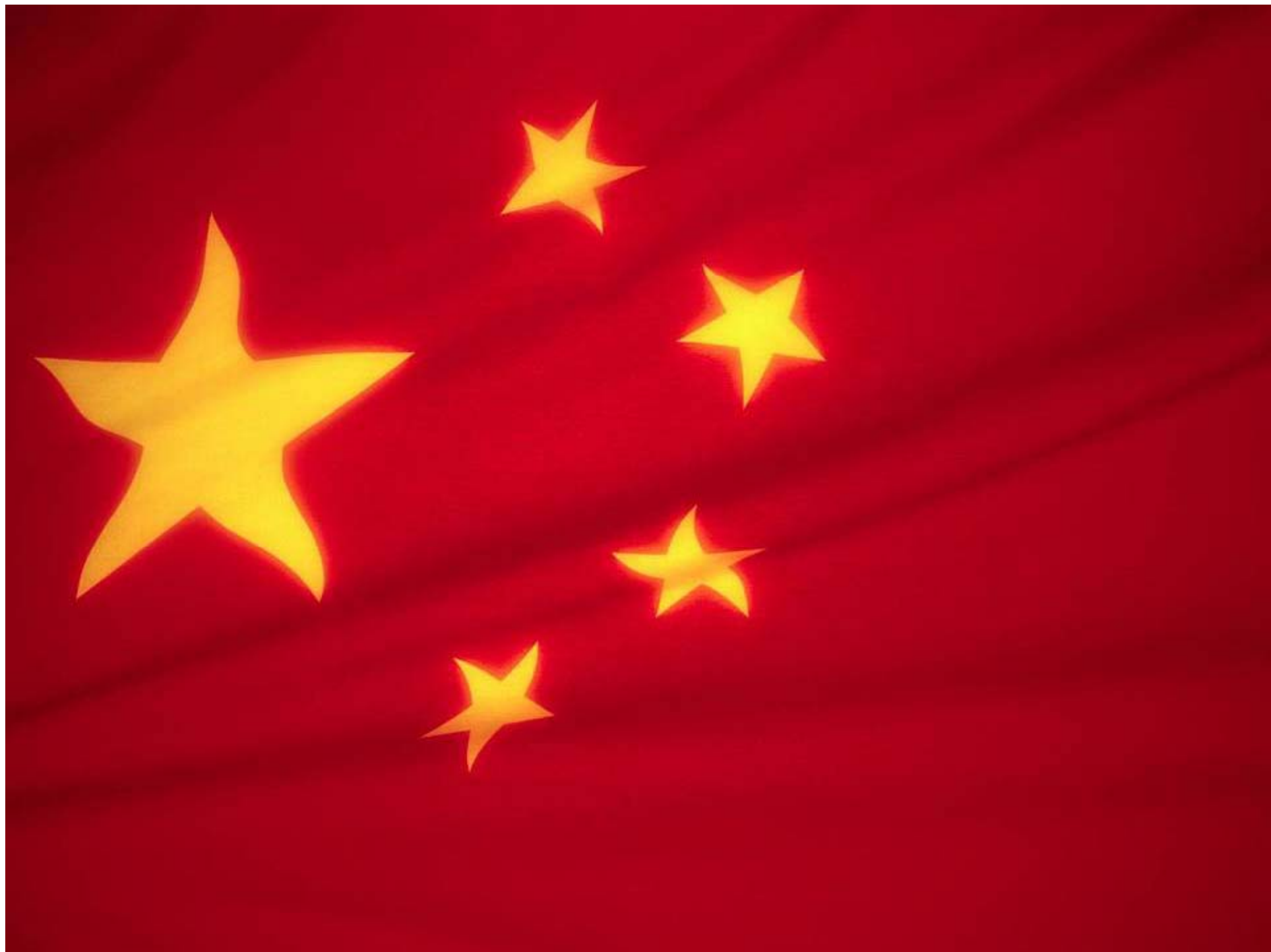
Eliminate 27B tons of CO₂



Sources: Vattenfall, McKinsey & Co.

4B tons of CO₂, **negative cost**







CHINA

**350 million
urbanizing
by 2030**

126 B tons coal reserves
2 B tons consumed per year
2 new CFPPs per year



Harmonious Society 2030

**20th
century
path**

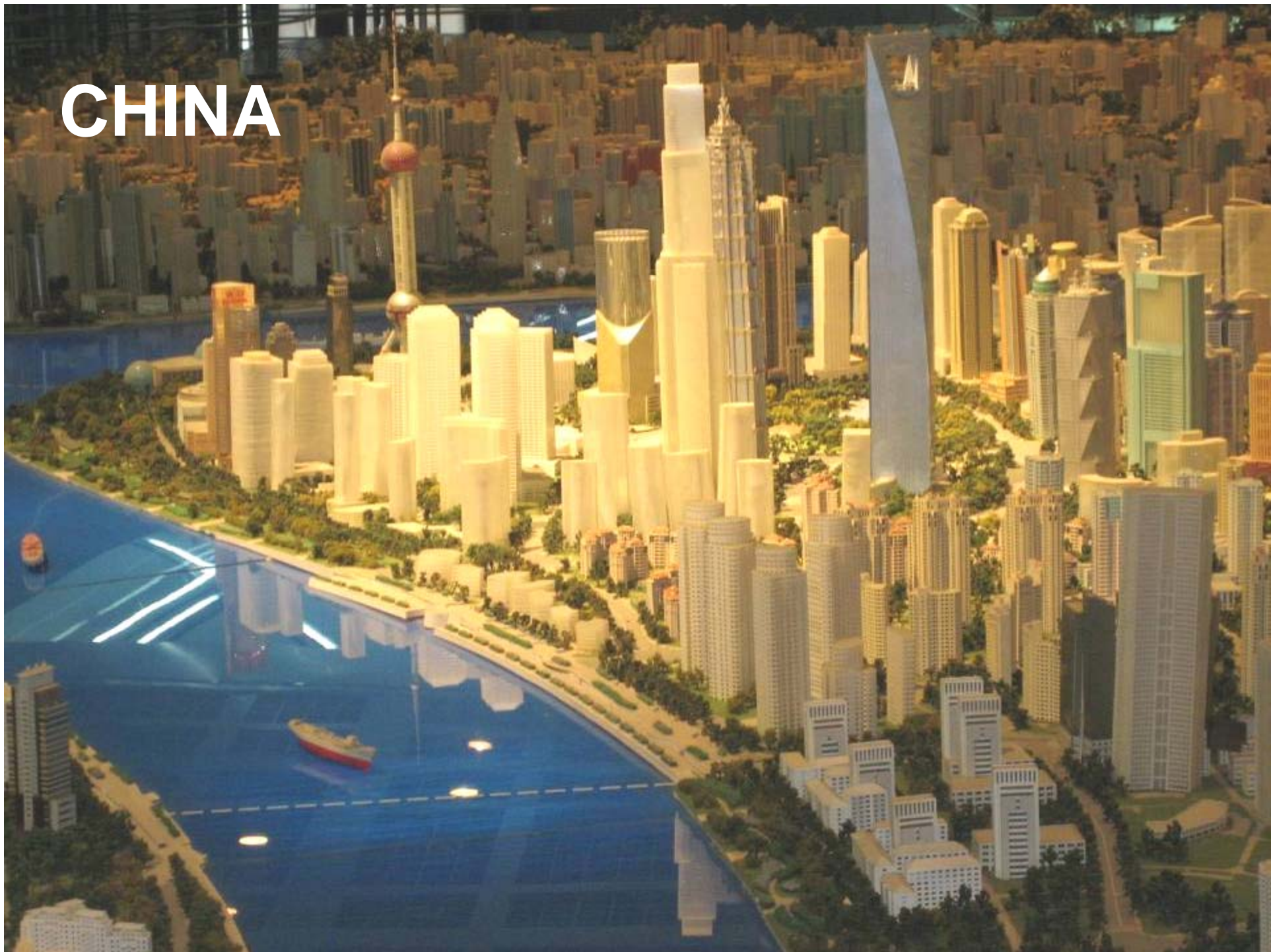


**Energy
efficient
path**

USA



CHINA




INDIA



DUBAI



The image features five identical globes of Earth, each showing the Americas and surrounding oceans, arranged in a circular pattern around a central text element. The globes are set against a solid black background. The text is written in a bold, red, sans-serif font.

**72 billion
people**

Green Cube



Family of Companies

Vision

Group of affiliated **companies** that can dramatically effect climate change on a **global scale** by focusing on the built environment.

Mission

Eliminate **1 billion tons** of CO₂.

Cubist Network

Key Advisors

Investors

Entrepreneurs

Scientists

Technologists

Developers

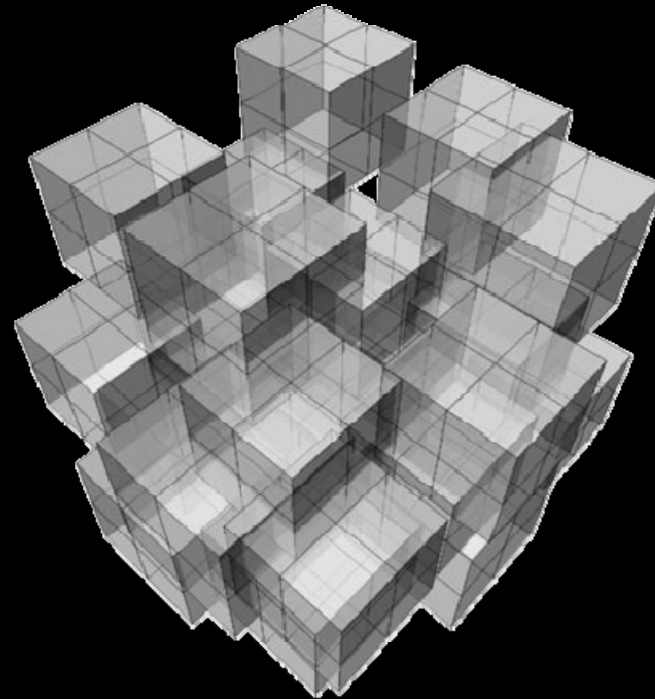
Attorneys

Officials

Research institutes

Universities

Regulators



Serious

Materials

Reinventing Drywall

U.S. market \$12B

200 trillion BTUs natural gas/year

#3 GHG emitter, 12M tons CO₂

Industry stuck

Same since 1917



EcoRock™



Serious
Materials

Same/better **cost**

Same/better **performance**

Superior **sustainability**

Scalable globally



CALSTARTM
CEMENT

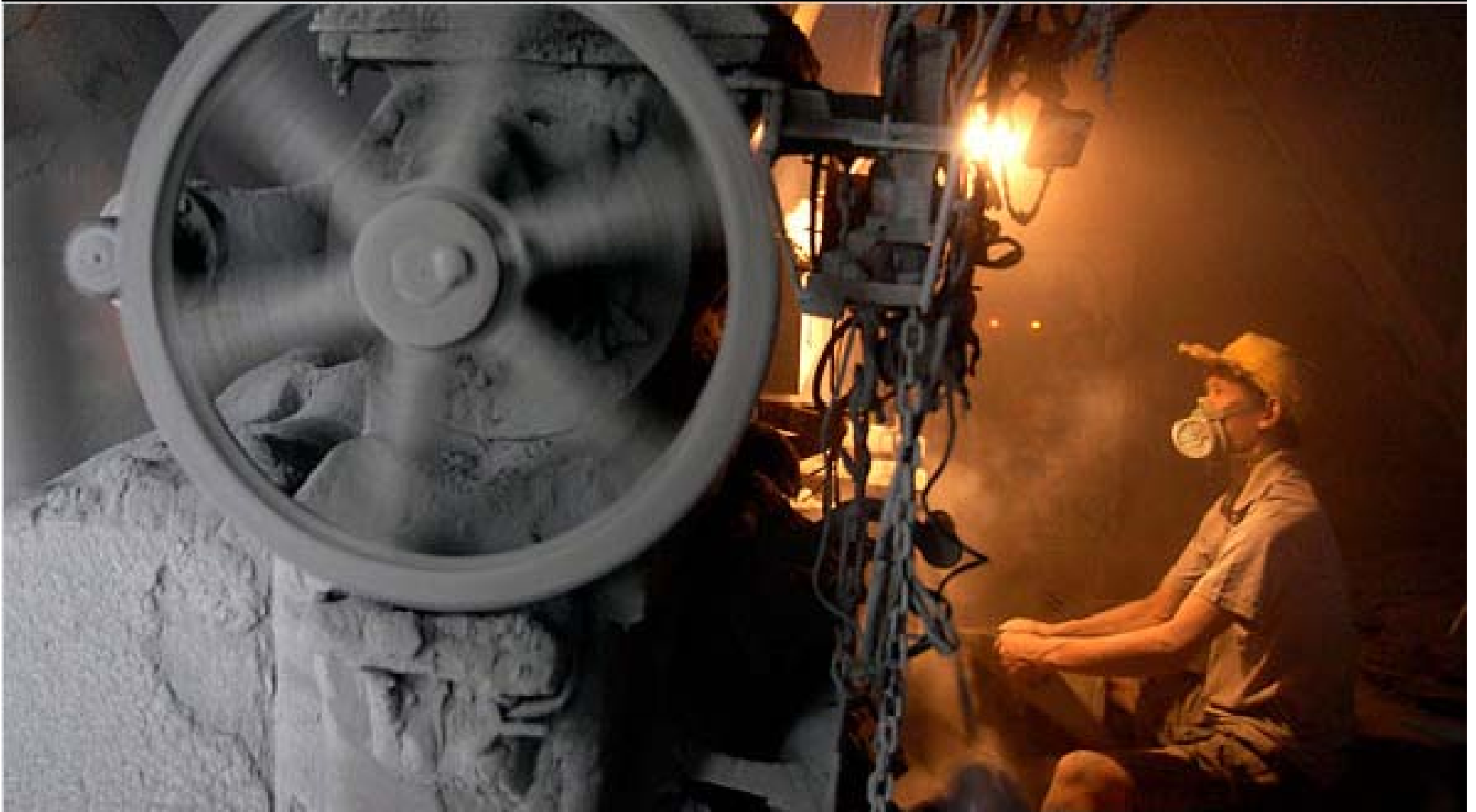
Cement

Portland cement, 8% of CO₂
2.5 billion tons/year
\$150B world market
Industry stuck
Same since 1824



The New York Times

“Cement Industry Is at Center of Climate Change Debate”



Source: NYT, October 26, 2007



CHINA

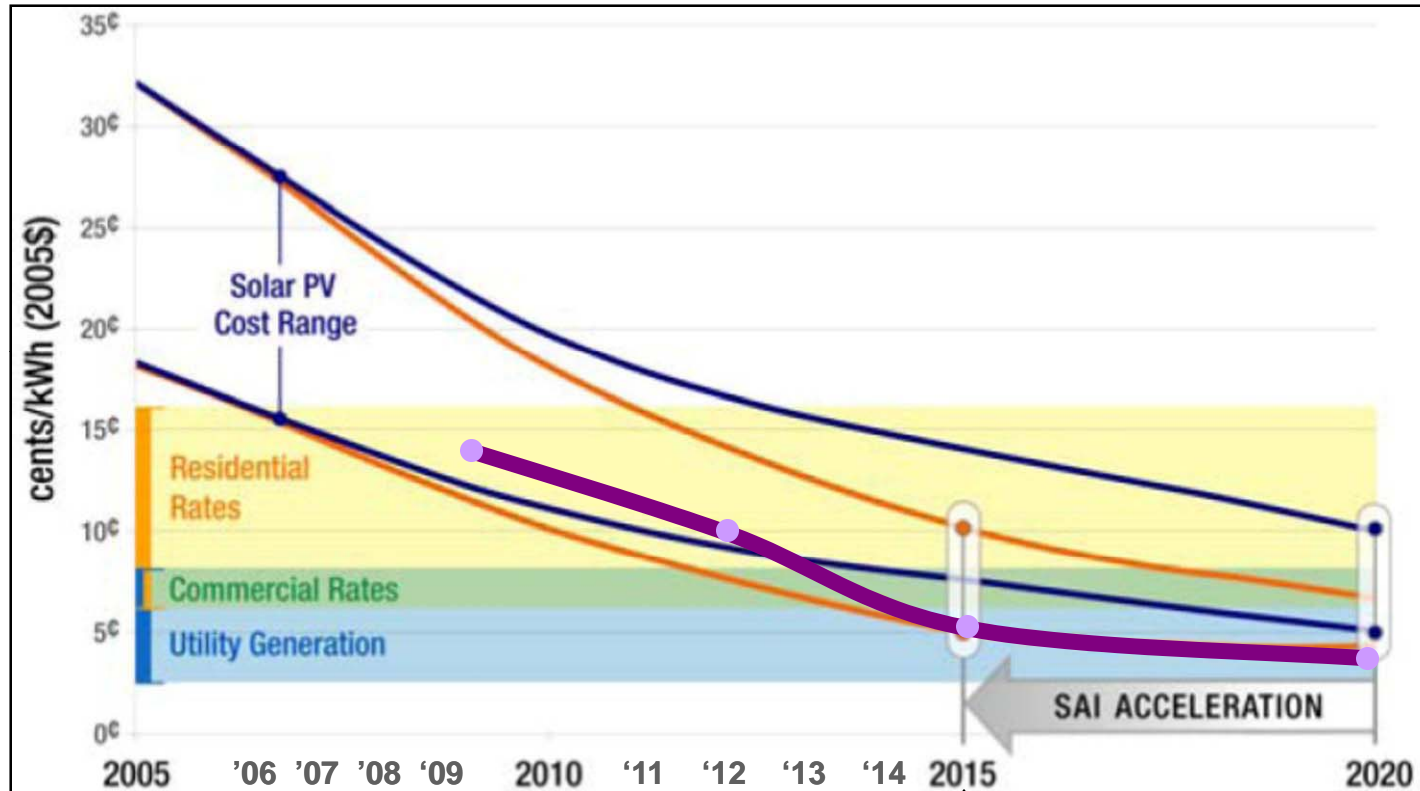
49% of
world
cement

HELORNDY



SAI Goal: Achieve Grid Parity Nationwide by 2015

Bringing Reduced-Cost Products to Market by 2010



Cost (¢/kWh) Benchmark 2005
23-32
16-22
13-22

Cost (¢/kWh) Target 2010
13-18
9-12
10-15

Cost (¢/kWh) Target 2015
8-10
6-8
5-7

ZETA

Communities

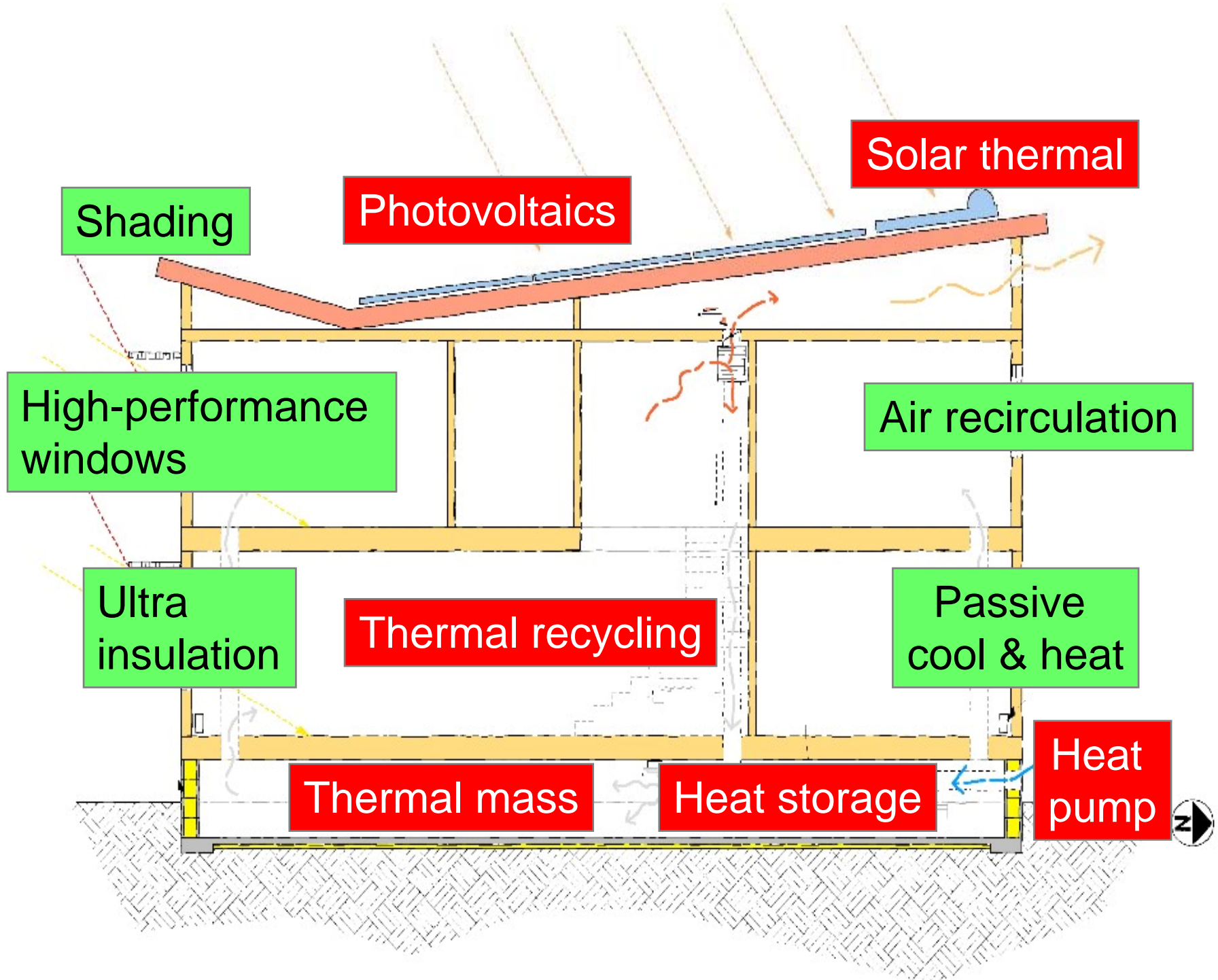
Net Zero Energy, \$100/sf

Low
energy
demand

Distributed
power
supply

Clean
materials





MATERIALS

Cement & Concrete

Drywall

Glass

Steel

CalStar Cement

Serious Materials

TBD

TBD

OPERATIONS

Air – Cooling, Heating & Quality

Appliances – Efficiency

Energy - Distributed Utility

Insulation – Walls & Roof

Lighting - Lights & Daylighting

Photovoltaics

Quiet

Solar Thermal - Air & Water

Water - Reprocess & Catchment

Windows - Thermal & Quiet

Zero Energy Operations

TBD

TBD

Suntegrity

TBD

TBD

Heliotricity

Serious Materials

TBD

TBD

Serious Materials

ZETA Communities

Everything
in the built environment
can be **reinvented**



Make a Difference

**Thank You
Marc Porat**