

# URBAN HEAT ISLANDS: CONSUMER, KILLER.

ENERGY COSTS ARE THROUGH THE ROOF. HOW PAINTING THEM WHITE CAN CURB CLIMATE CHANGE.

## THE EARTH TODAY

IS FULL OF DENSE CITIES WITH ROOFS AND ROADS. HEAT GETS TRAPPED IN THESE DARK SURFACES

THE WORLD ABSORBS **71% SUNLIGHT**

REFLECTS **29% SUNLIGHT**



97°F 1934 vs 105°F 1990

ANNUAL PEAK TEMPERATURE LOS ANGELES

**55% OF CITIES ARE MAN-MADE SURFACES**

**12% OF NYC IS ROOF TOPS**

**THIS IS WHY CITIES ARE CALLED URBAN HEAT ISLANDS**

14 1997 vs 80 2080

DAYS ABOVE 90°F IN LOS ANGELES

### KILLER: HEAT

U.S. NATURAL DISASTER DEATH TOLL 1970 - 2004

### CONSUMER: ENERGY

ENERGY CONSUMPTION IN THE UNITED STATES

**15,958** people died

HURRICANES LIGHTNING TORNADES FLOODS EARTHQUAKES **39%**

HEAT RELATED **50%**

OTHER **11%**

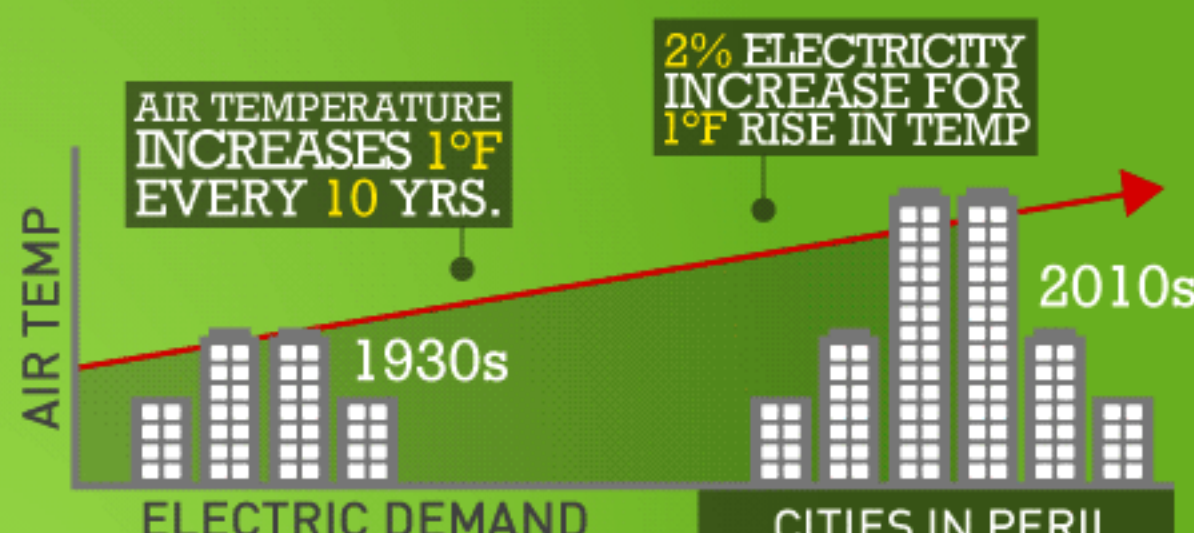
**SAVE GRANDMA**  
ELDERLY FOLK IN LOW INCOME AREAS ARE AT HIGHEST RISK.

☠ = 1,000



### CITY DEMANDS ARE GROWING

10% OF URBAN ELECTRICITY DEMAND COMPENSATES FOR THE HEAT ISLAND EFFECT



**LOS ANGELES**  
3 POWER PLANTS (1.5 GIGAWATTS) COMPENSATES FOR HEAT ISLAND EFFECT  
HOURLY \$100,000  
YEARLY \$100,000,000

**CITIES IN PERIL**  
TOKYO WASHINGTON PHOENIX SHANGHAI TUCSON BALTIMORE

**EACH DECADE DEMAND INCREASES BY 1 POWER PLANT (500 MEGAWATTS)**

## POWER OUTAGE

CITIES ARE MEETING THEIR PEAK LOADS. THAT MEANS A GREATER CHANCE OF BLACKOUTS.



### NEW YORK CITY 2003

**PEAK DEMAND**  
28,634 MEGAWATTS

**BLACKOUT**  
22,934 MEGAWATTS OFFLINE

### QUEENS, NEW YORK 2006: 9 DAY OUTAGE

**\$188,000,000** TOTAL LOSSES

**\$111M** COMMERCIAL

**\$77M** RESIDENTIAL

**MAJOR LOSS CATEGORIES**

**\$29M** LOST WAGES & DINING OUT

**\$21.5M** SPOILED FOOD

**\$19M** HOUSING RELATED

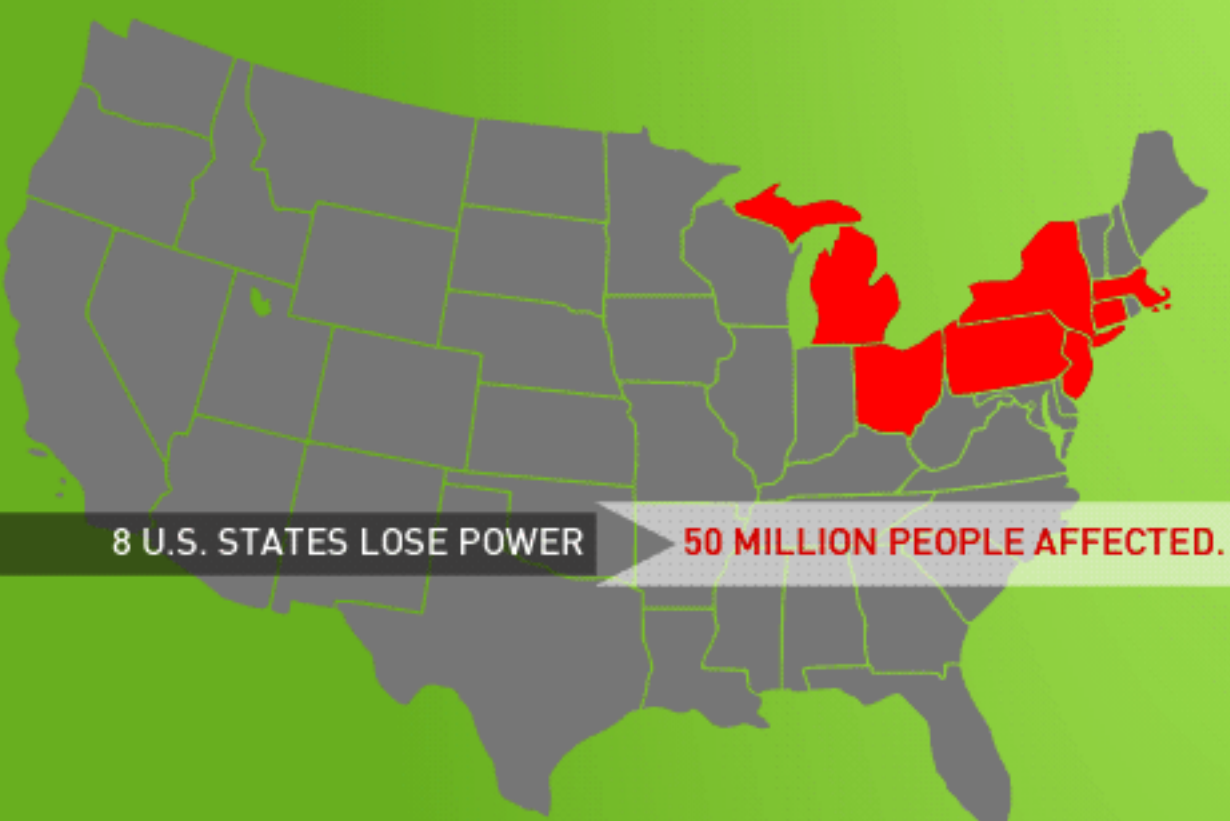
**\$7.3M** MEDICAL RELATED

**174,000** PEOPLE AFFECTED

**\$17.5 MILLION** REIMBURSED

■ = \$1,000,000

### OHIO POWER PLANT 2003: 4 DAY OUTAGE

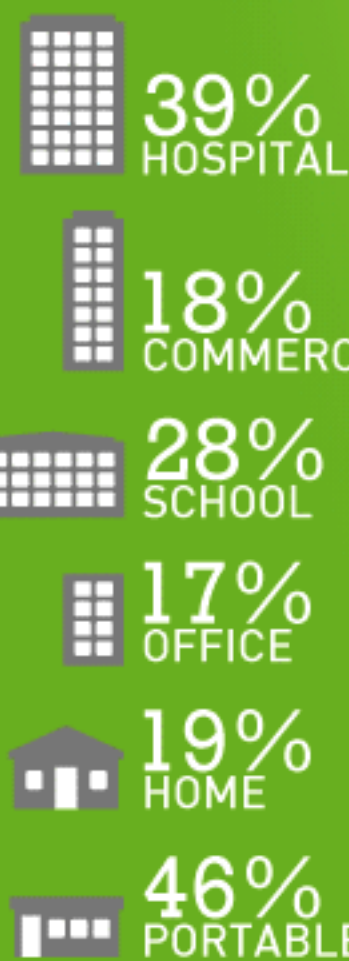


## WHAT CAN WE DO?

### A TALE OF TWO ROOFTOPS



### ENERGY SAVINGS BY BUILDING TYPE



### A/C SAVINGS BY STATE

% OF BUILDINGS WITH A/C + AGGREGATE ROOF AREA - WHITE ROOF EFFECT

**\$37,000,000** PHOENIX, ARIZONA

**\$35,000,000** LOS ANGELES, CALIFORNIA

■ = \$1,000,000

### UNITED STATES SAVINGS WHITE ROOF EFFECT

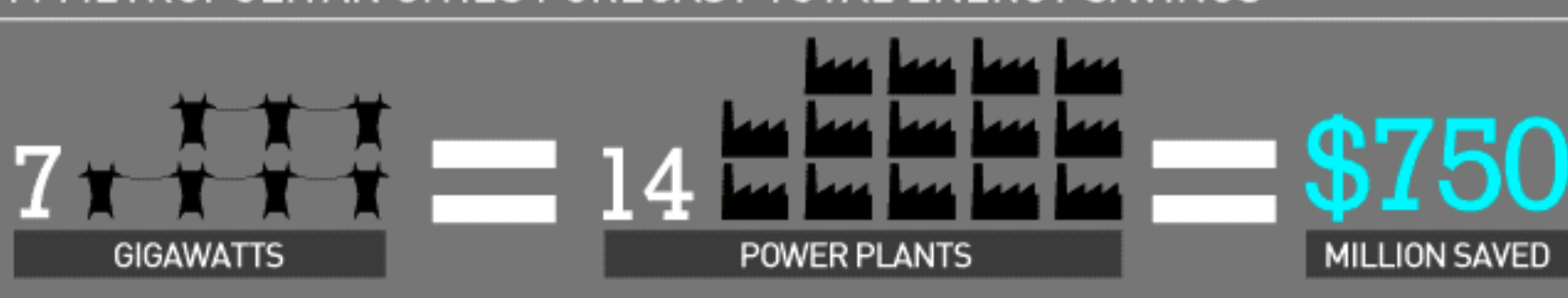


## CITY WIDE EFFECTS

### LOS ANGELES PROGRAM



### 11 METROPOLITAN CITIES FORECAST TOTAL ENERGY SAVINGS



**DRAINS INTO RIVERS LAKES OCEANS AND CAUSES SURFACE TEMPS TO RISE 8°F**

**CUTS DOWN ON PEAK DEMAND IN CITIES AND COULD END BLACK OUTS**

## THE EARTH IN 2030

2/3 OF THE ENTIRE POPULATION WILL LIVE IN URBAN SETTINGS.

IF WE PAINT **5%** EVERY YEAR FOR 20 YEARS IN 2030 WE'LL BE DONE.

WILL ABSORB **70% SUNLIGHT**

REFLECT **30% SUNLIGHT**

TOTAL SAVINGS IN CO<sup>2</sup> **24 BILLION** METRIC TONS = CO<sup>2</sup> EMITTED IN 2010 **24 BILLION** METRIC TONS



IT'S LIKE TURNING OFF THE WORLD FOR 1 YEAR.