

Cool Homes Program

Featuring Elastomeric Coating or “White Roof”



Cool Homes Program is sponsored by The Energy Coordinating Agency of Philadelphia

The Problem

Extreme heat waves create life threatening conditions, especially for low-income elderly and disabled persons who are socially isolated.

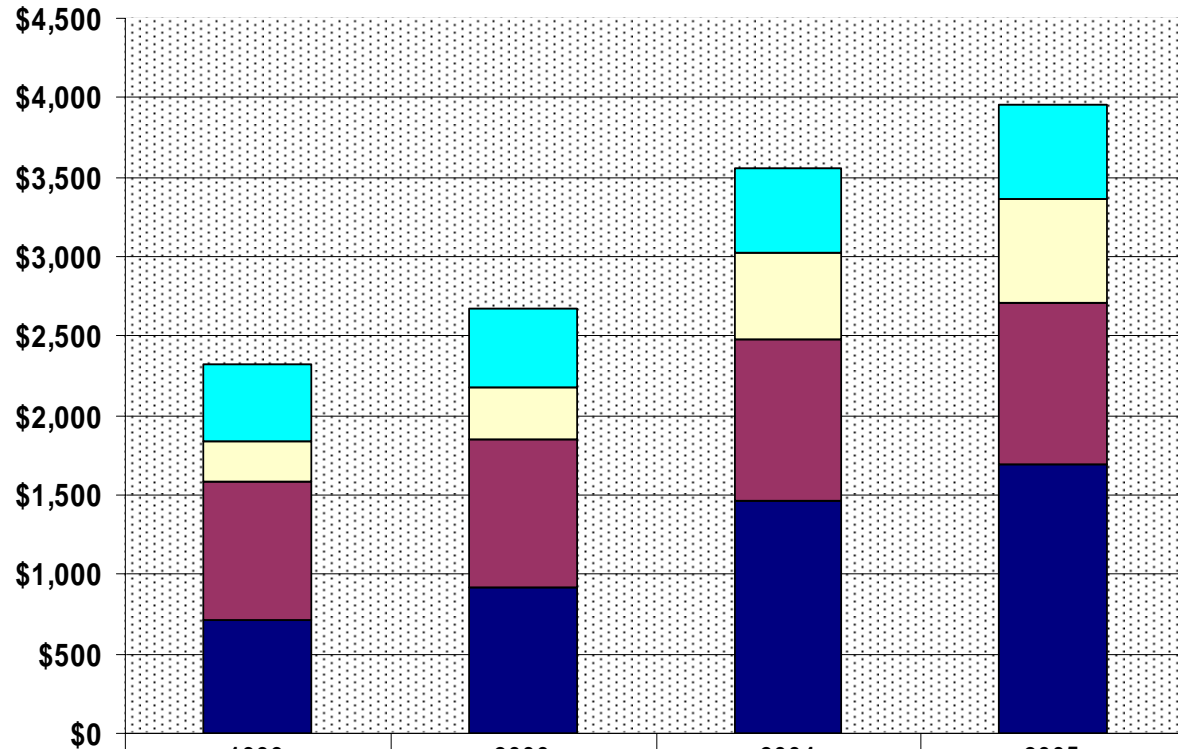
Philadelphia has had four “killer” heat waves in the last ten years: **1993 = 118 deaths**

1995 = 61 deaths

1999 = 67 deaths

2002 = 29 deaths

Average Energy Cost in Philadelphia



Water	
Gas for Cooking & Water Heat	
Electricity	
Heat	

TOTAL	\$2,327	\$2,668	\$3,559	\$3,959
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World Oil Peak

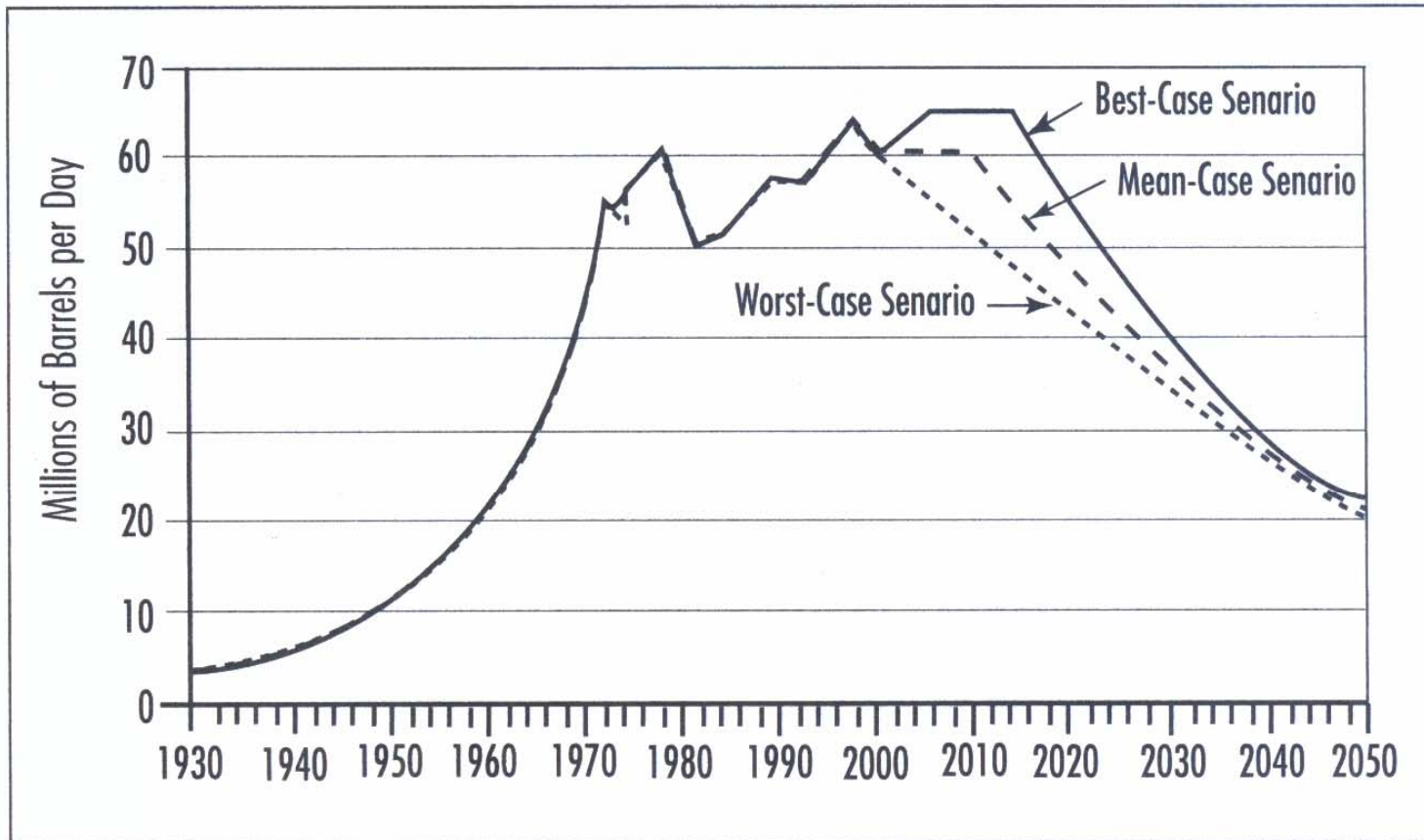
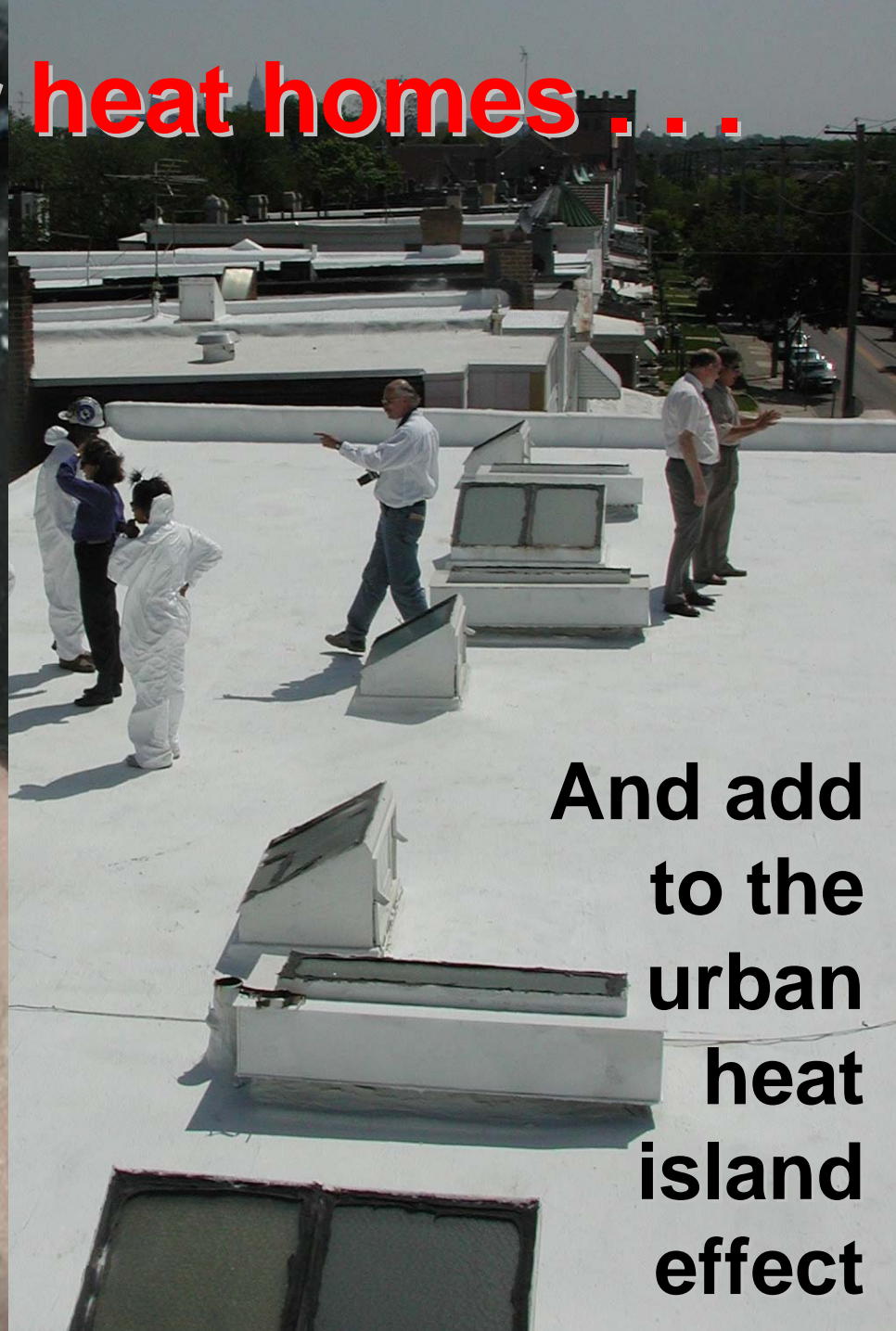


Figure 7. World oil production 1930–2050: best-, worst-, and mean-case scenarios, in millions of barrels per day (Source: C. J. Campbell)

Black roofs super heat homes . . .



**And add
to the
urban
heat
island
effect**

The Solution = Cool Homes

Affordable Cooling Program

Goals:

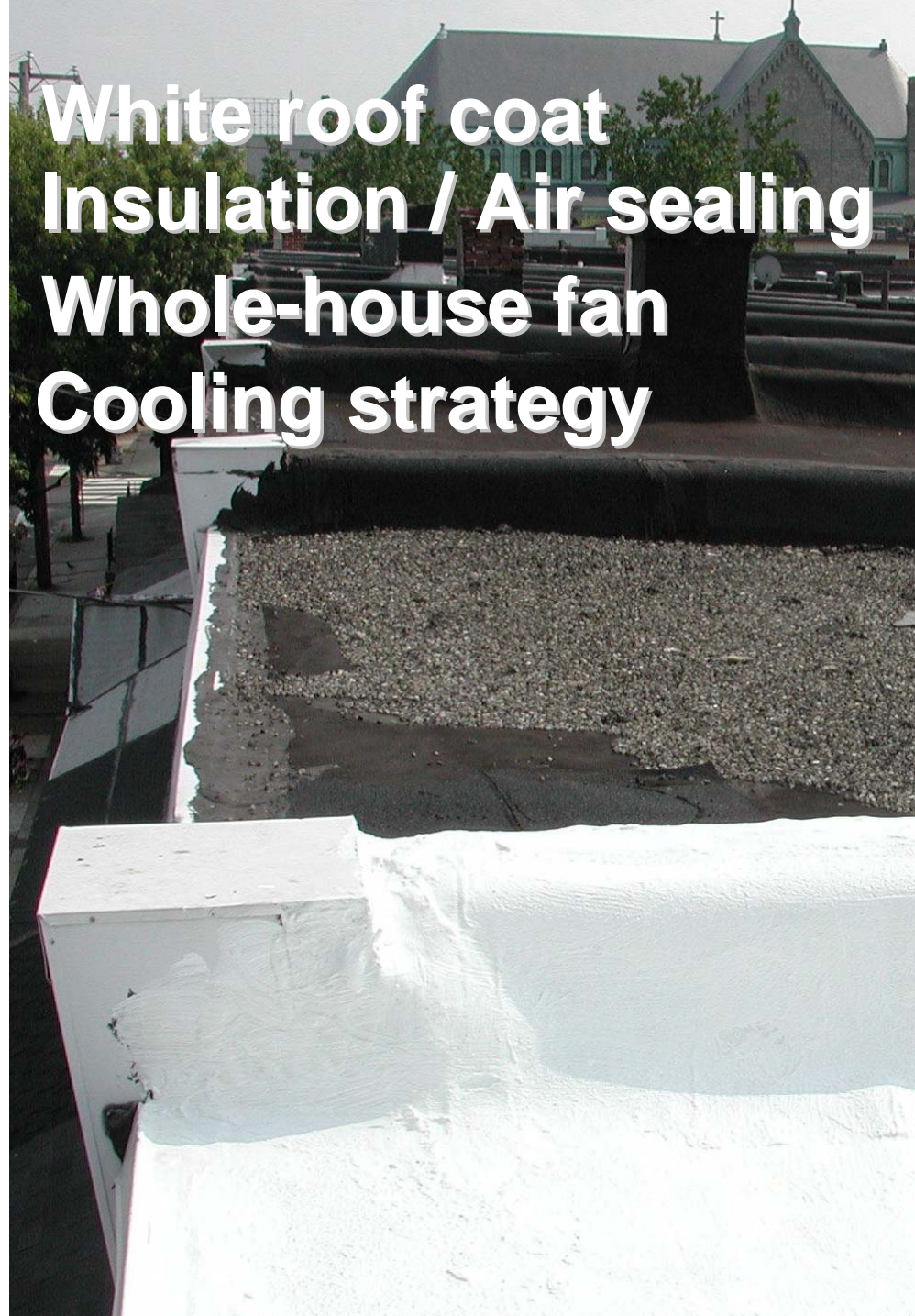
Reduce indoor air temperature to comfortable levels while reducing the occupants' energy bills

Maximize passive cooling and ventilation
Minimize air conditioning

Methods:



White roof coat
Insulation / Air sealing
Whole-house fan
Cooling strategy



Treatments

White, acrylic elastomeric roof coatings

R-38 Roof insulation and air sealing

Window mounted whole house fan

Baseload electricity conservation treatments

Weatherization and other referrals

Restore function of windows

Window security, screens and shades

Anticipated Benefits

**Lower indoor temperature in summer
Reduced health risk to occupants**

Lower energy bills

Fewer utility delinquencies, terminations

Improved roof life

Less roofing material in landfills

Reduced urban heat island effect

Polyester Fabric is Applied

Where Needed



Coating is Sprayed or Rolled



Independent Evaluation of:

Indoor temperature

Pre/post monitoring on 1st and 2nd floors

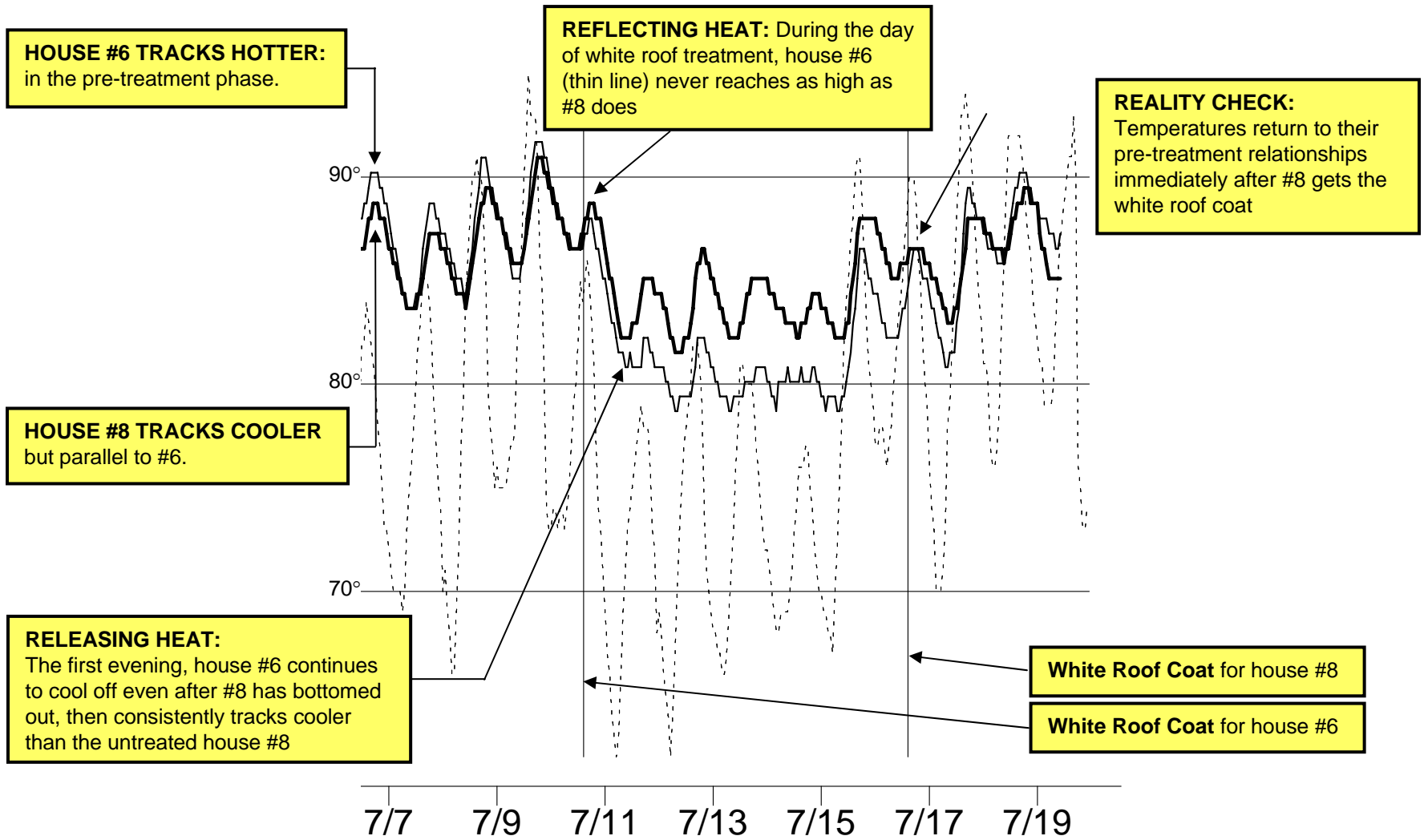
Energy consumption

electricity, gas, water

Comfort and Security Level

Pre/post questionnaire

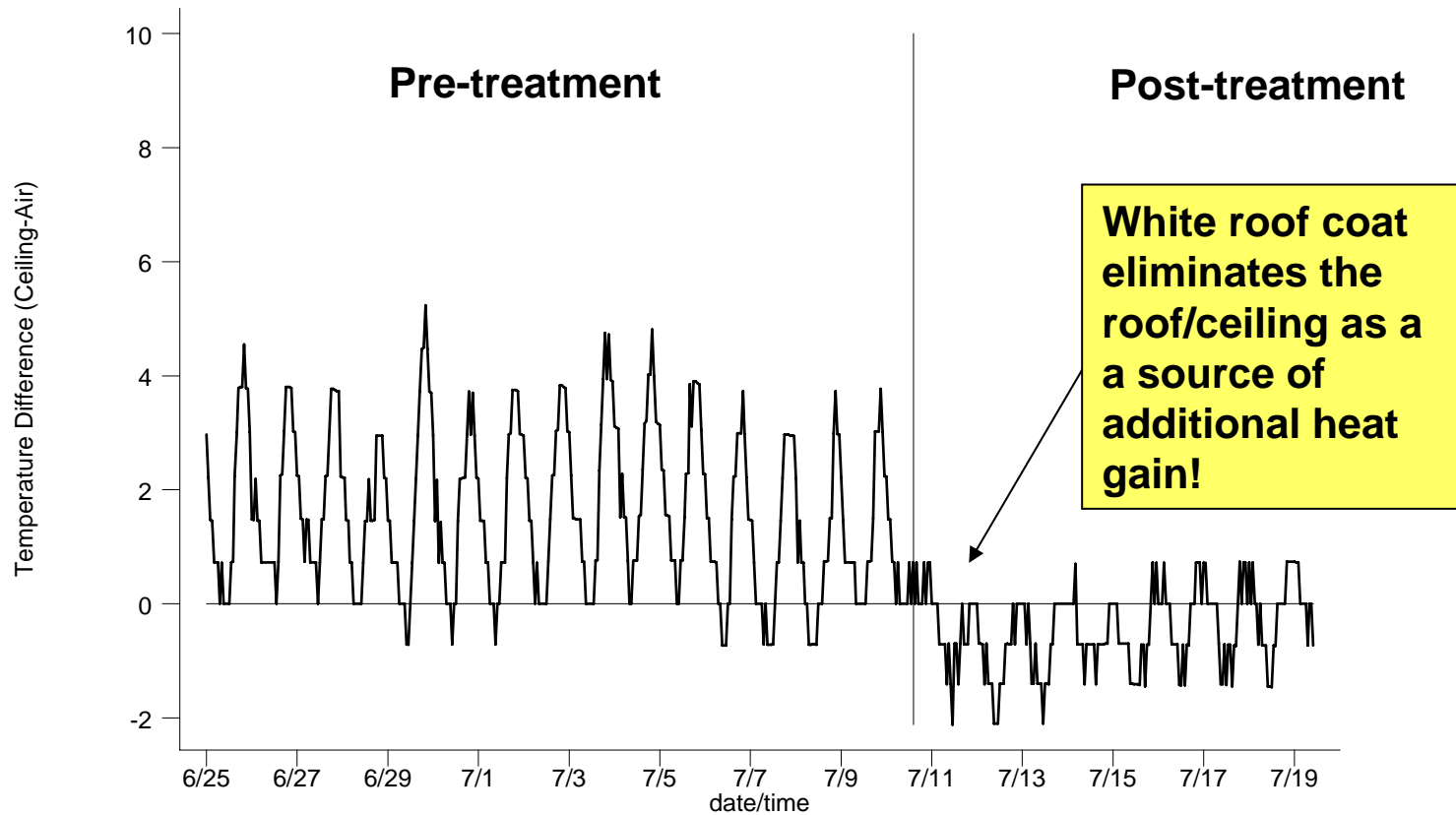
Tracking the Effects



Tracking the effects of white roof coating on two identical homes

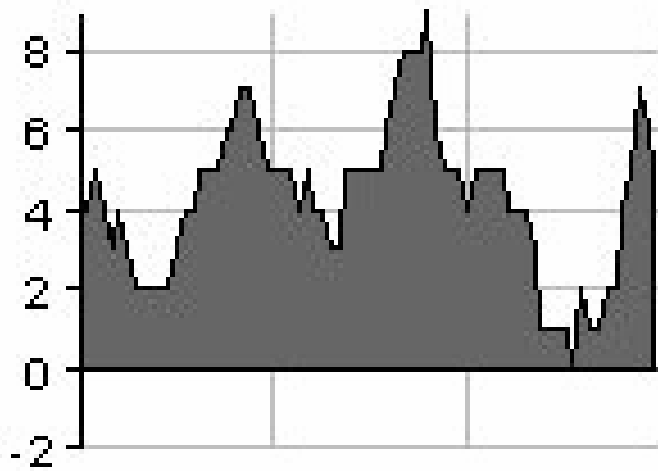
Temperature Differences

Between Ceiling and Air in house #6

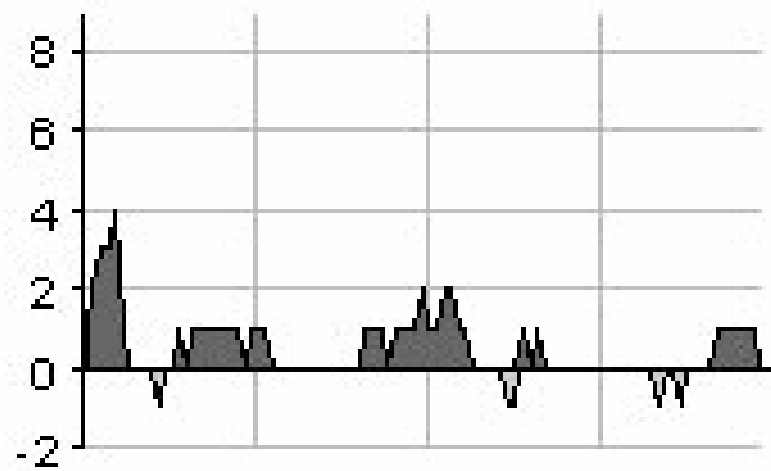


Heat Gain from Attic to Bedroom

AC01 pre



AC01 post



Program Results

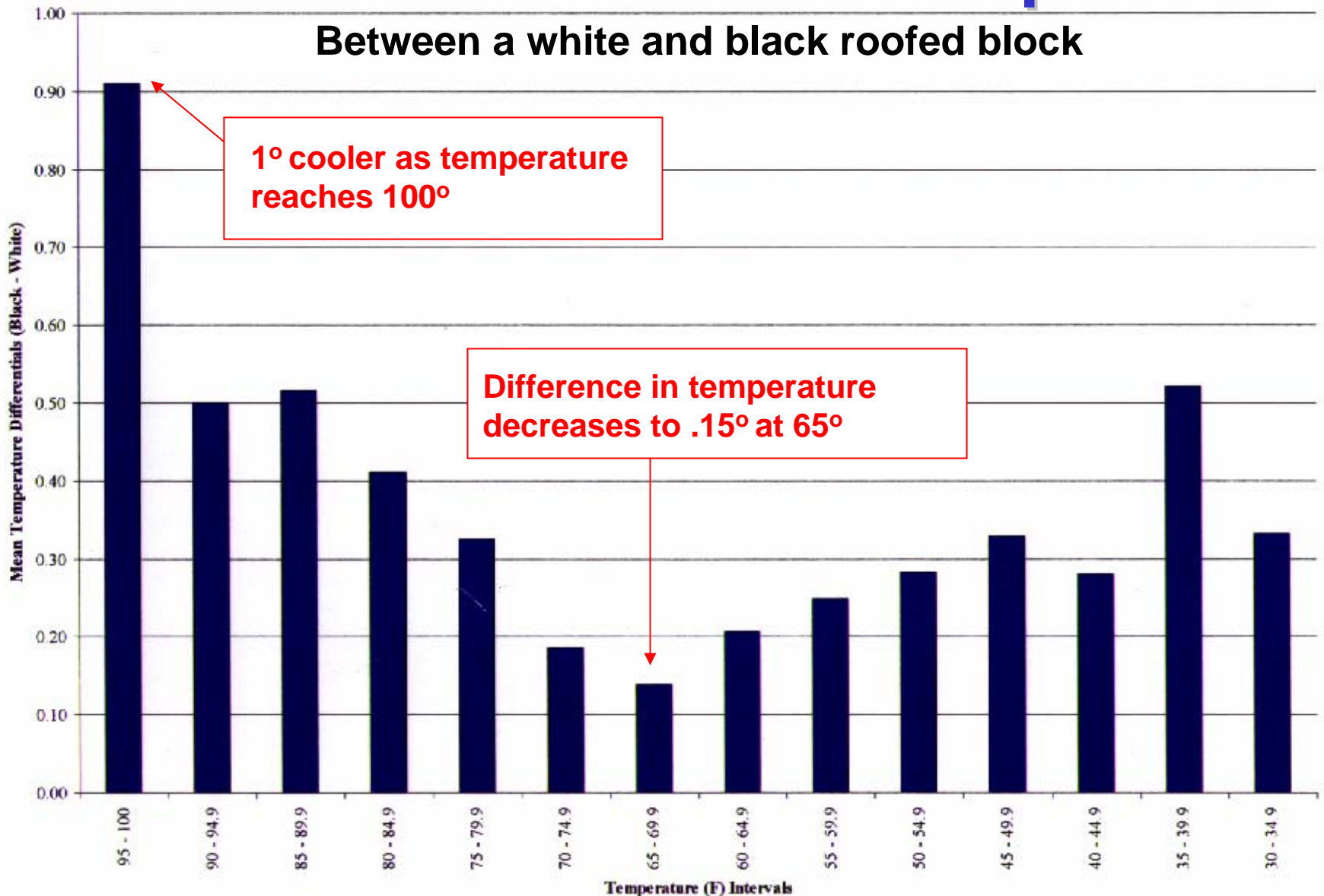
- 5 degrees F cooler at ceiling height (avg)
- 5 degrees F cooler than ambient (maximum)
- 2 degrees F cooler from fans at night (avg)
- Energy Savings Year Round
- More than 30% reduction in cooling load if the home were centrally air conditioned
- Higher comfort levels
- Greater roof durability and longevity

Cool Block West Philly



Difference in Outdoor Temperature

Between a white and black roofed block



Cool Block in Bridesburg



The Choice is Clear



Cool Homes Presentation

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