



**A HYPER-LOCAL SOLUTION TO A NASTY GLOBAL PROBLEM**



**JUST THE FUN!**



**CHERP**



**JUST THE FUN!**





This house is

**CHERP**-ing

House Number: **63**



Claremont Home Energy Retrofit Project  
**ClaremontEnergy.org**

My energy bills are lower



This house is **CHERP**-ing  
House Number: **63**  
ClaremontEnergy.org







I'm saving energy



I'm helping to reduce my carbon footprint



My home is quieter and more comfortable



Is your home CHERP ing









This house is **CHERP** ing  
House Number: **53**  
Claremont Home Energy Retrofit Project  
**ClaremontEnergy.org**

**WE DID IT !**

Claremont Home Energy Retrofit Project

**CHERP**

Phase I Goal

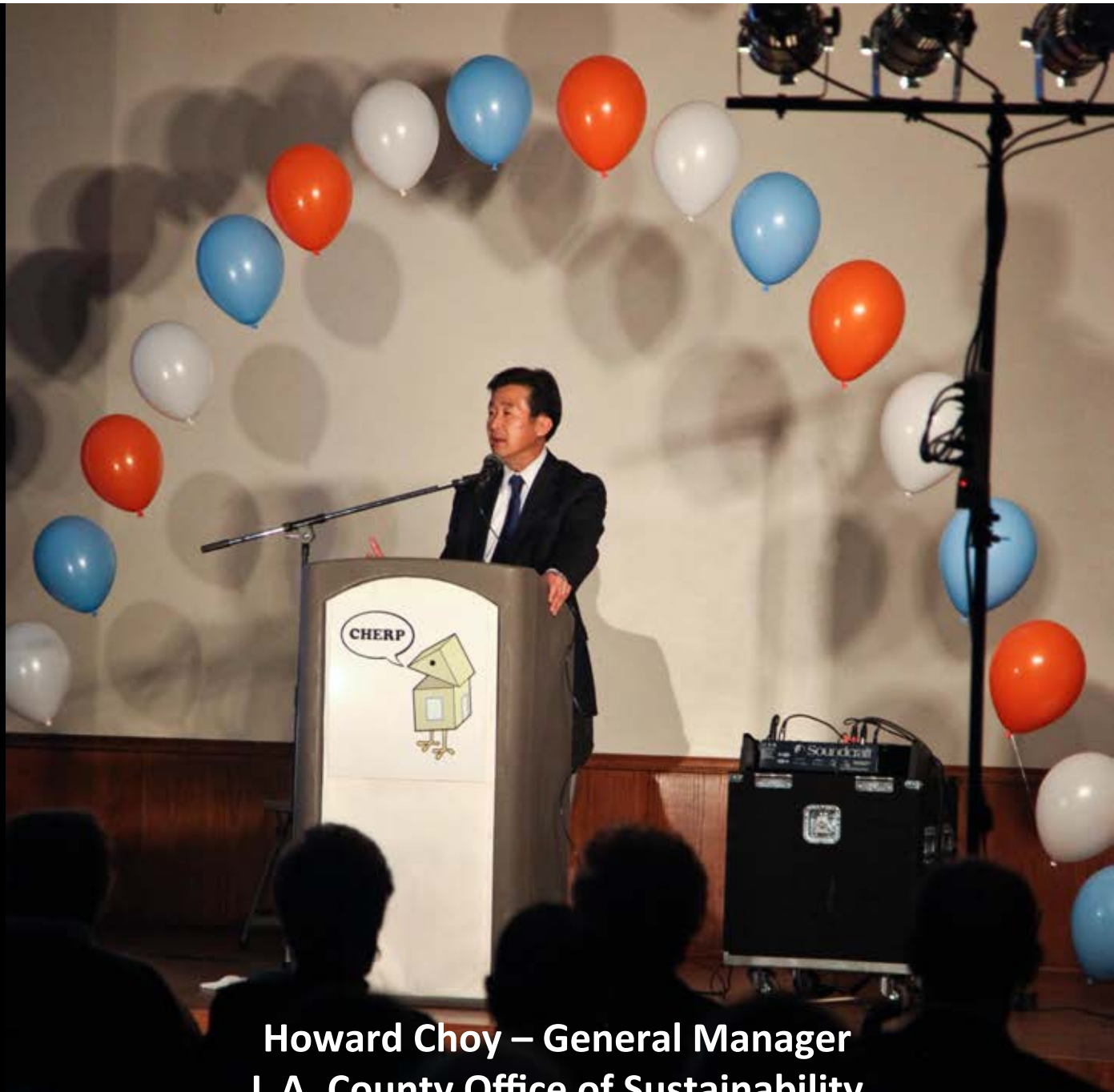
**130 Homes!**

Our B.H.A.G





Larry Schroeder – Mayor of Claremont



**Howard Choy – General Manager  
L.A. County Office of Sustainability**



**Andrew McAllister – Commissioner, California Energy Commission**



**Ken Alex  
Senior Energy Advisor  
To Governor Brown**

# WE DID IT !

## Community Home Energy Retrofit Project

A cartoon illustration of a house character. The house is yellow with a black outline, has a black dot for a window, and two yellow legs. A white speech bubble with a black outline is positioned above the house, containing the text 'CHERP'.

**CHERP**

Phase I Goal

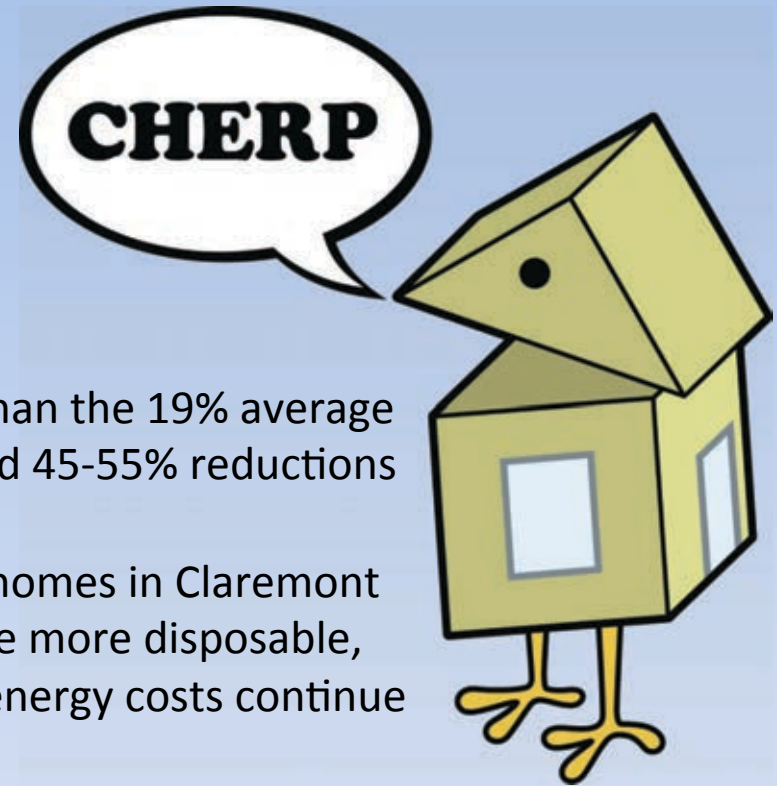
# 130 Homes!

Our B.H.A.G



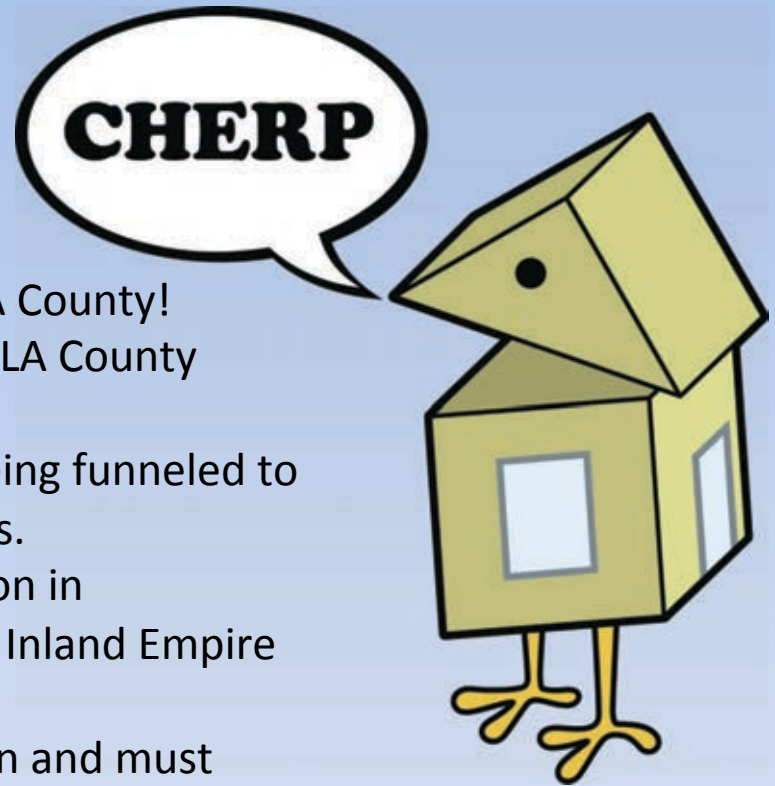
## GOAL: 130 HOMES BY END OF 2012

- 162 Homes Currently being Retrofitted
  - \$2.2+ Million invested in Community Real Estate
  - Dozens of local construction jobs created
  - \$6000,000+ Rebates funneled into the Community
  - Average 27% modeled Energy Savings (45% higher than the 19% average in L.A. County!) Many homeowners have experienced 45-55% reductions in energy use.
  - Average 27% reduction in energy bills for 1% of the homes in Claremont that now acts like an annuity that continues to create more disposable, local income and will save much more over time as energy costs continue to rise while the retrofit investment is already made
  - Massive Reduction in Green House Gasses
  - Measurable increase in homeowner's comfort and air-quality and a decrease in noise, dust and CO poisoning.
- <http://www.claremontenergy.org/case-study>
- Local property values increased (studies show up to 9% with BIG Green Rating)
  - Over 160 properties being Green Point Rated



# CHERP Accomplishments

## GOAL: 130 HOMES BY END OF 2012



- Sustainable Claremont is TOP Energy Champion in LA County!
- Claremont has Highest Per-Capita rate of retrofits in LA County
- Claremont has highest rate of Deep-Energy Retrofits
- Energy Champion money (\$56,000 + to date) now being funneled to Pilgrim Place, Schools, and other Community projects.
- Example of good global warming *mitigation* (reduction in greenhouse gasses) and *adaptation* practices (as the Inland Empire temperatures are predicted to rise 4°-5° by 2050)
- Demonstrates that the Public and Private sectors can and must work together for effective and scale-able change initiatives
- Created a CHERP model for retirement communities and HOAs through [The Pilgrim Place Energy Efficiency Project](#)
- CHERP now becoming a model for other Communities – Goal: 5 more CHERPs this year

# CHERP Accomplishments



# Historical Restoration



HARTMAN  
BALDWIN  
design/build



HARTMAN  
BALDWIN  

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design/build



**Gold Master Design Award Winner**

*- Renovations Category, Qualified Remodeler Magazine*

**HARTMAN  
BALDWIN**  
design/build



**Gold Master Design Award Winner**

*- Additions Category, Qualified Remodeler Magazine*

**HARTMAN  
BALDWIN**  
design/build



**Silver Master Design Award Winner**

*- Outdoor Living Category, Qualified Remodeler Magazine*

**HARTMAN  
BALDWIN**  
design/build





**Best Design of the Year Award Winner**

*- 2004 Remodeling Magazine*

**HARTMAN  
BALDWIN**  
design/build



**New Homes**

**HARTMAN  
BALDWIN**  

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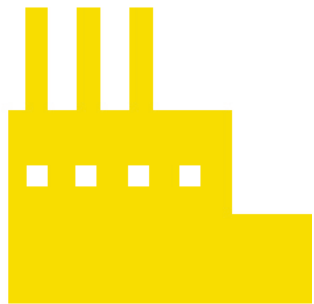
**design/build**



**New Homes**

**HARTMAN  
BALDWIN**  
design/build

Buildings in the U.S.  
consume more energy  
than any other **country**  
except the U.S. and China



**INDUSTRY**  
25%



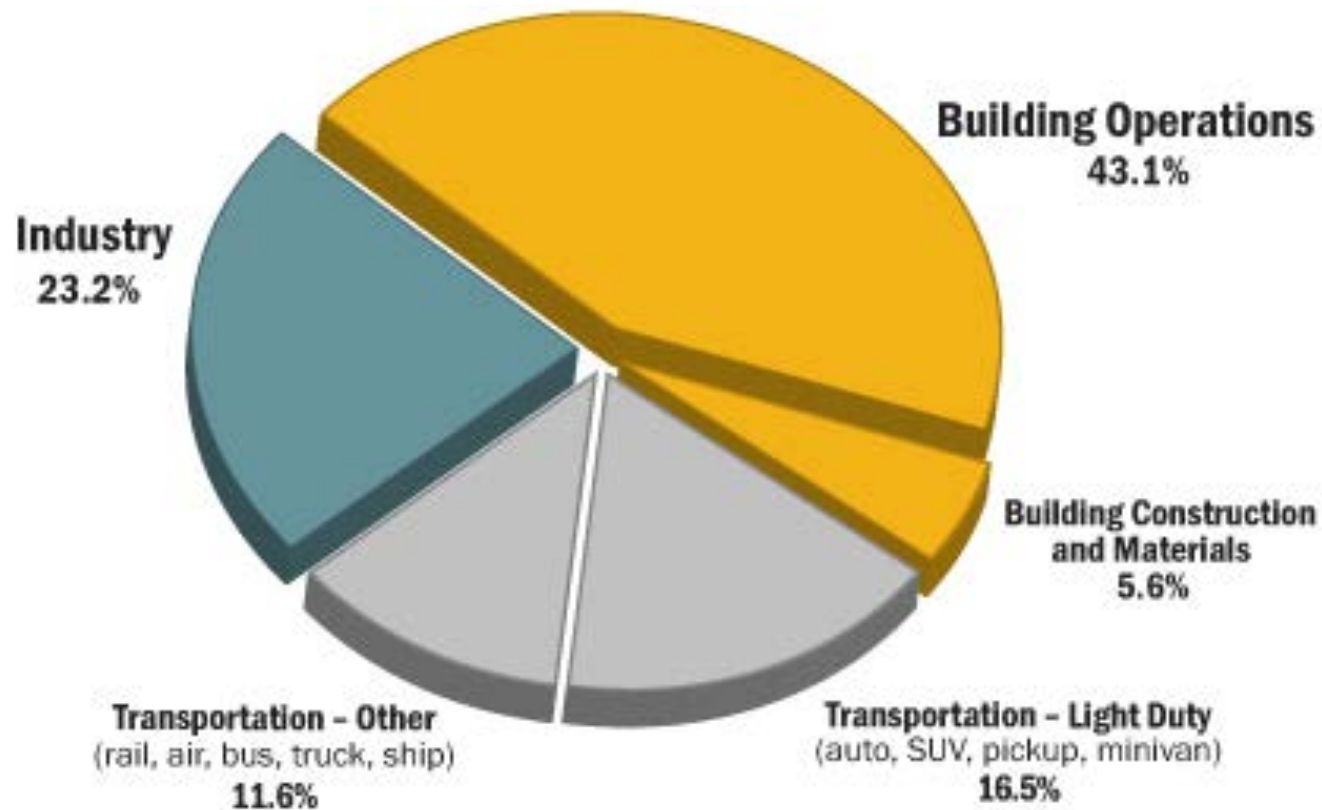
**TRANSPORTATION**  
27%



**BUILDINGS**  
48%

**U.S. ENERGY CONSUMPTION**

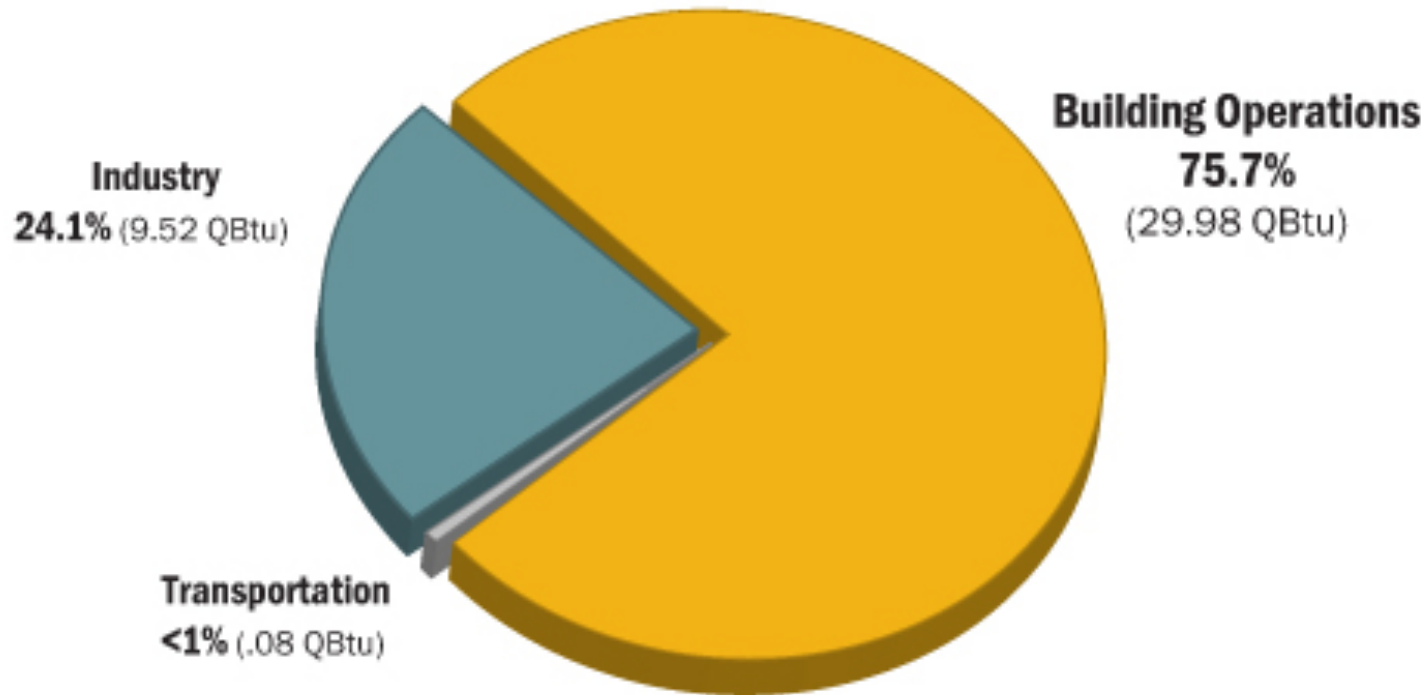
# Where is our energy going?



## U.S. Energy Consumption by Sector

Source: ©2011 2030, Inc. / Architecture 2030. All Rights Reserved.  
Data Source: U.S. Energy Information Administration (2011).

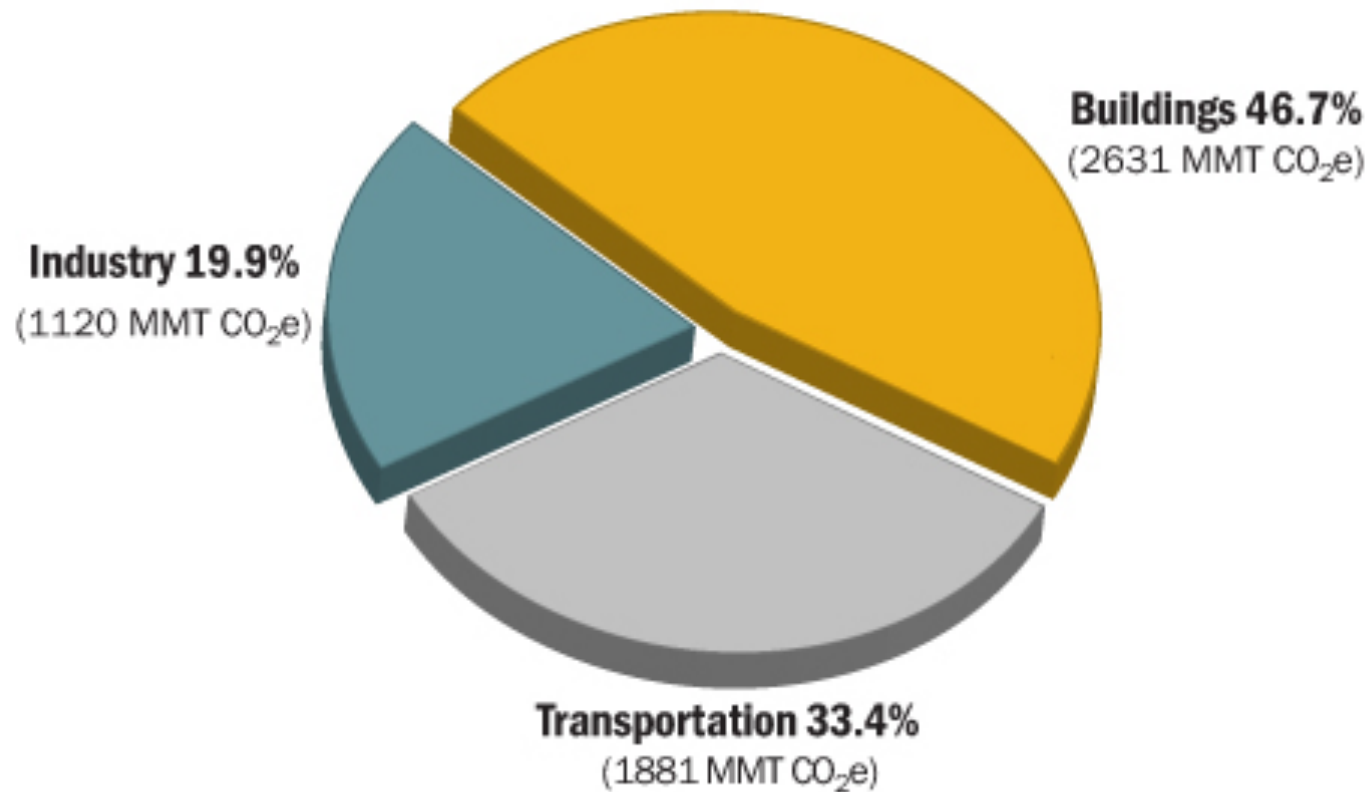
# Where is our electricity going?



## U.S. Electricity Consumption by Sector

Source: ©2011 2030, Inc. / Architecture 2030. All Rights Reserved.  
Data Source: U.S. Energy Information Administration (2011).

# Buildings are responsible for 60%-70% of emissions worldwide



## U.S. CO<sub>2</sub> Emissions by Sector

Source: ©2011 2030, Inc. / Architecture 2030. All Rights Reserved.  
Data Source: U.S. Energy Information Administration (2011).

**The Problem: Buildings**

**The Solution: Buildings**

# **Energy Efficiency Revolution**





## McKinsey – ROI on \$ and CO<sub>2</sub>

Energy efficiency offers a  
**vast, low-cost energy resource**  
for the U.S. economy

- Energy savings: \$1.2 trillion by 2020, cost of \$520 billion = \$700 billion savings
- Building retrofit items are actually a Negative Cost – costs more **not** to do them

**But** only if the nation can craft a comprehensive and innovative approach to unlock it – addressing significant and persistent barriers at the local level.

## Global Problem – Local Solution

# Health of the Planet tied to Buildings

# Health of the Economy tied to Construction

## The Building Sector:



## Building Sector Economic Inputs by Industry Type

Source: ©2010 2030, Inc. / Architecture 2030. All Rights Reserved.  
Data Source: U.S. Bureau of Economic Analysis.

**Virtually every U.S. Industry depends on the products and services generated by the construction industry**

# Jobs, Jobs, Jobs

- For every:
  - \$1 billion invested in a coal power plant = 870 jobs
  - \$1 billion invested in solar photovoltaic = 1,500 jobs
  - \$1 billion invested in building retrofits = 6,700 jobs
- **Retrofitting 1% of CA's homes will create 24,000 jobs**



## WHAT WE GET

WITH ENERGY EFFICIENCY AND CLEAN POWER

Unlock  
**\$5**  
trillion  
in savings

Support a  
**158%**  
bigger  
economy

Use  
**0**  
energy from oil,  
coal, and nuclear

### SOURCES

RMI analysis detailed in *Reinventing Fire*  
(Chelsea Green) October 2011 and  
available at [Reinventingfire.com](http://Reinventingfire.com)

Learn more at [rmi.org](http://rmi.org)

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# By 2050

The most amazing, game changing revelation that the public has never heard of.

**“Only puny secrets need  
protection - big, life changing  
discoveries are protected by  
public incredulity”**

**Marshall McLuhan**



## We're from the Government and we're here to help you

- President Obama
- U.S. Secretary of Energy Steven Chu - Building Science
- DOE/EPA – Home Performance with Energy Star
- U.S. Navy – cut fossil fuels by 50% by 2020. EE is “first fuel” for Navy
- Schwarzenegger - **AB32** Calif. Global Warming Solutions Act of 2006: 1st in the world comprehensive program to cost-effectively reduce GHG
- Jerry Brown - 1978 T-24 and appliance standards saving \$70 Billion and avoiding nuclear power plants up the coast. Started renewables revolution. Strengthened CEC & CPUC
- CEC - Whole-House Energy Retrofits Cornerstone of Policy
- CPUC - Largest and most comprehensive residential retrofit program in the U.S. Reduce energy consumption by 40% in 13M homes by 2020
- Utilities
- Counties
- Cities





energy  
upgrade  
CALIFORNIA

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in Los Angeles County





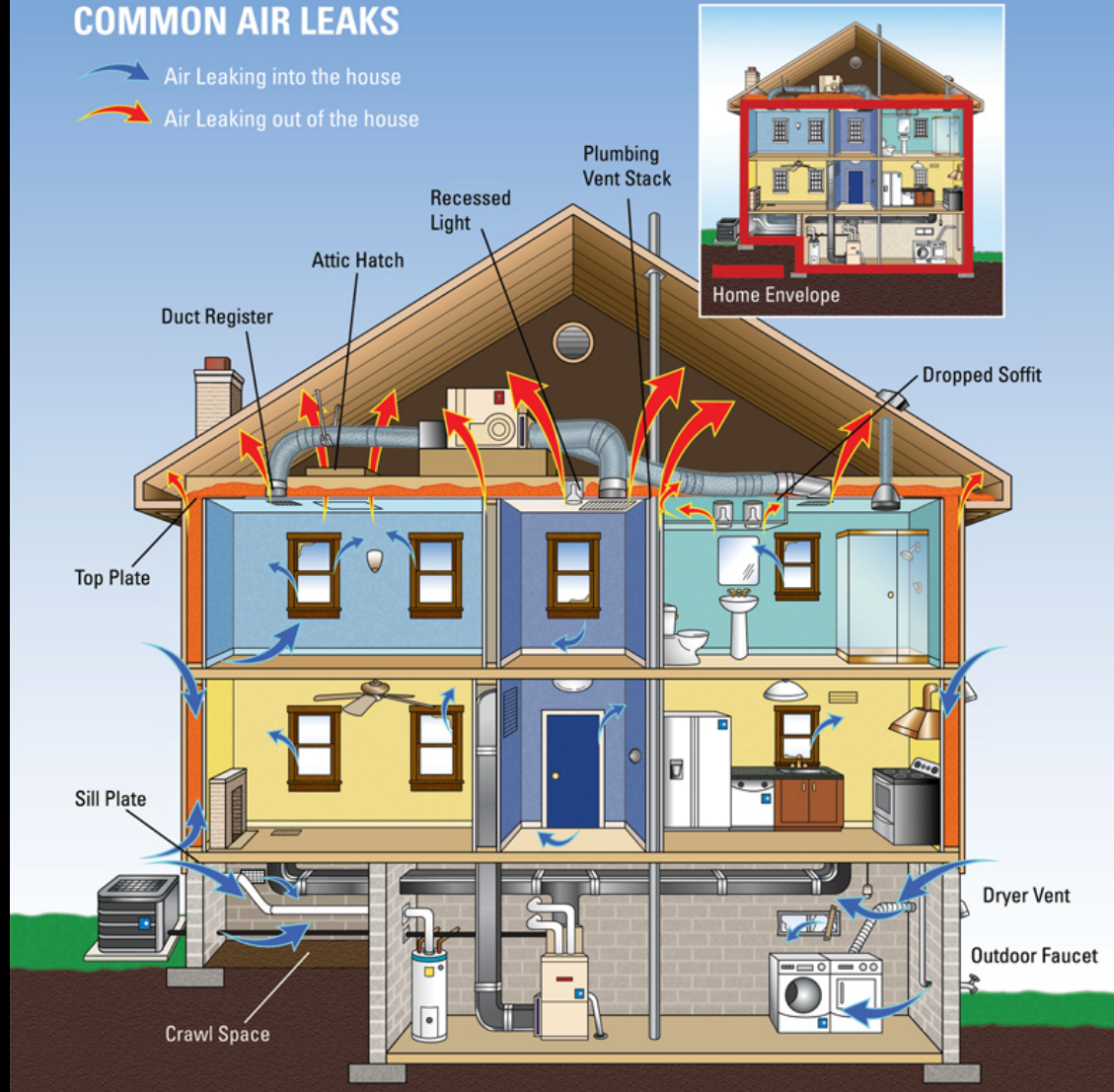
# Home Performance - Building Science

## Your House is an Energy System



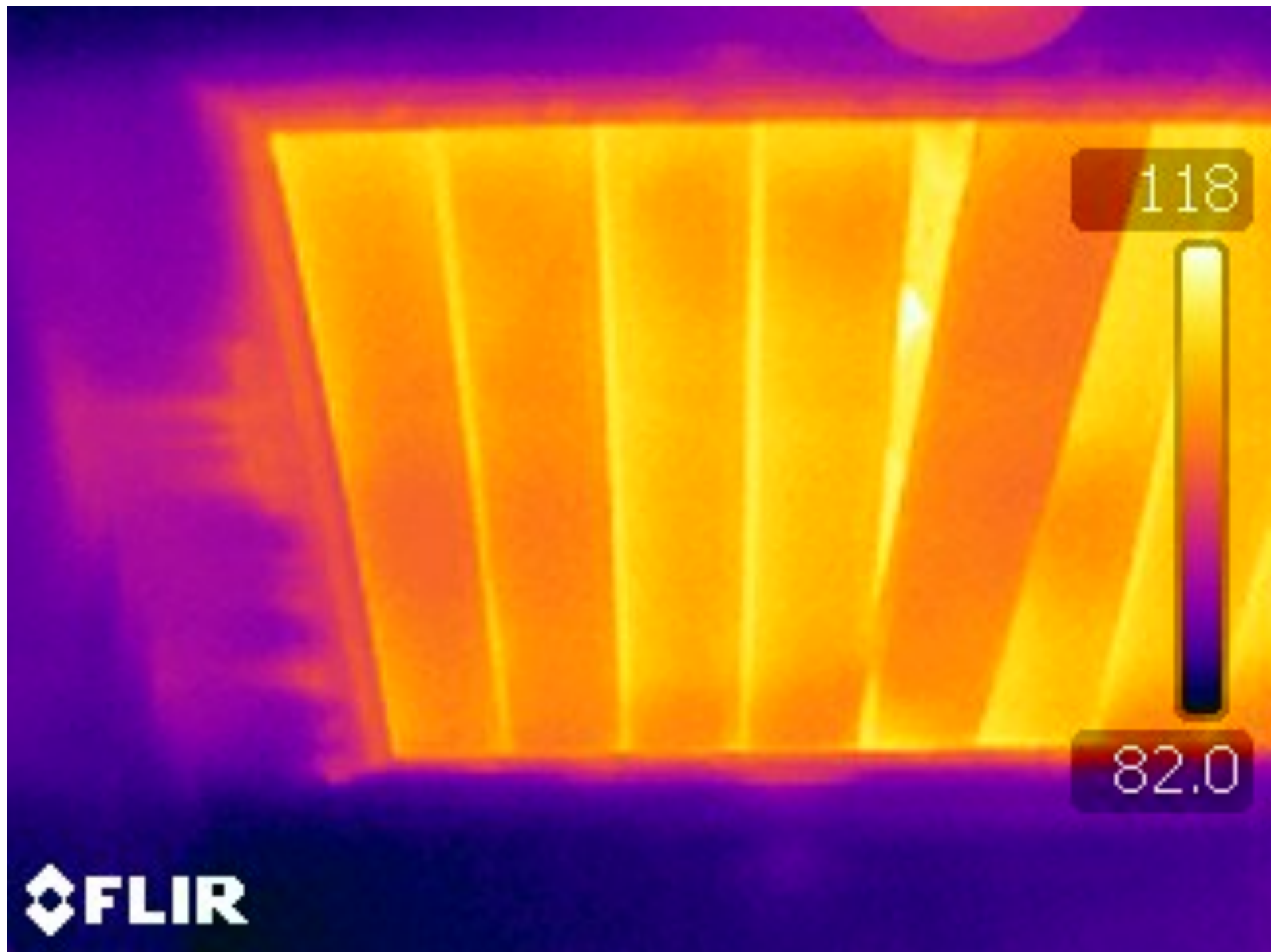
### COMMON AIR LEAKS

-  Air Leaking into the house
-  Air Leaking out of the house

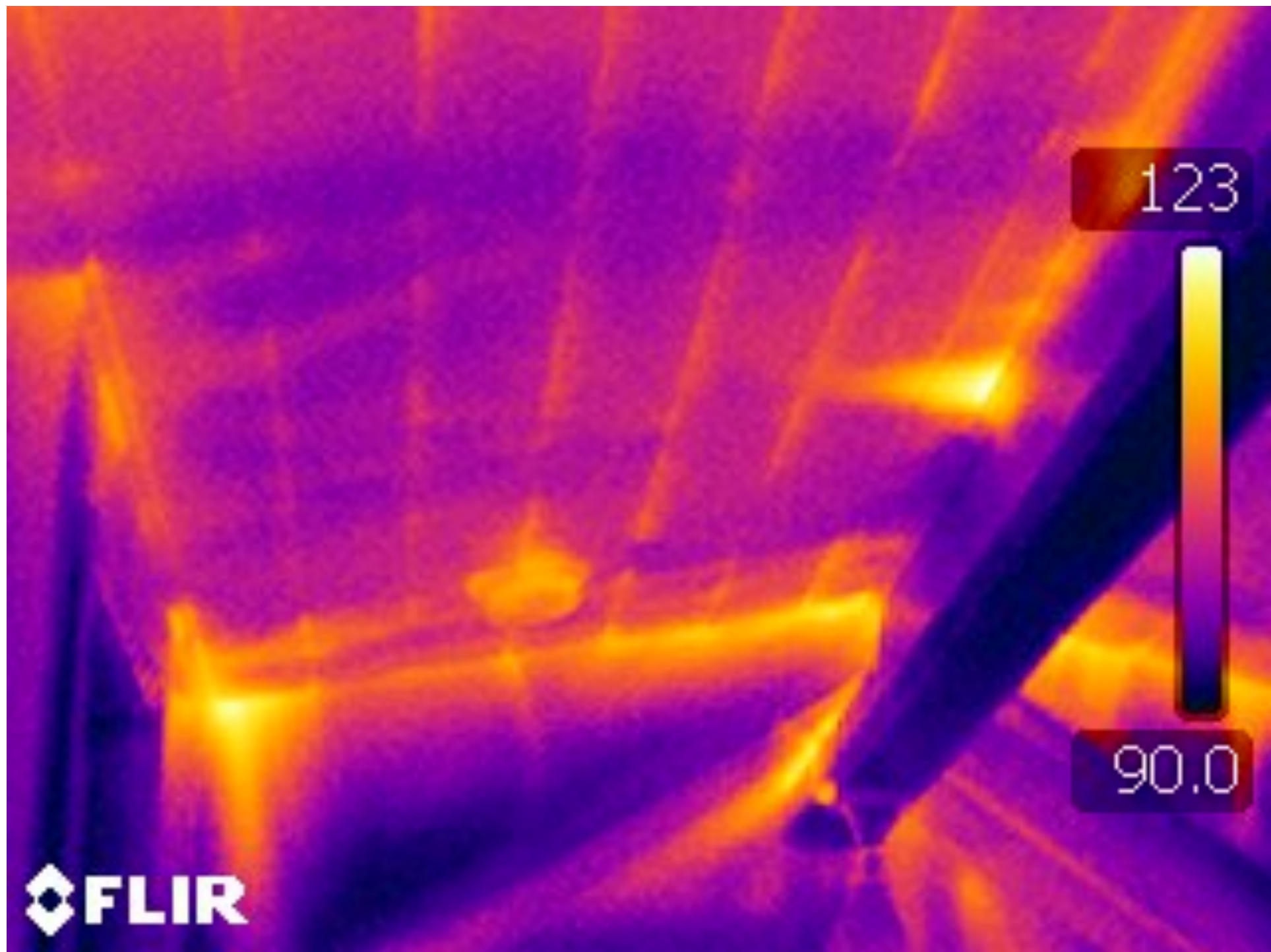




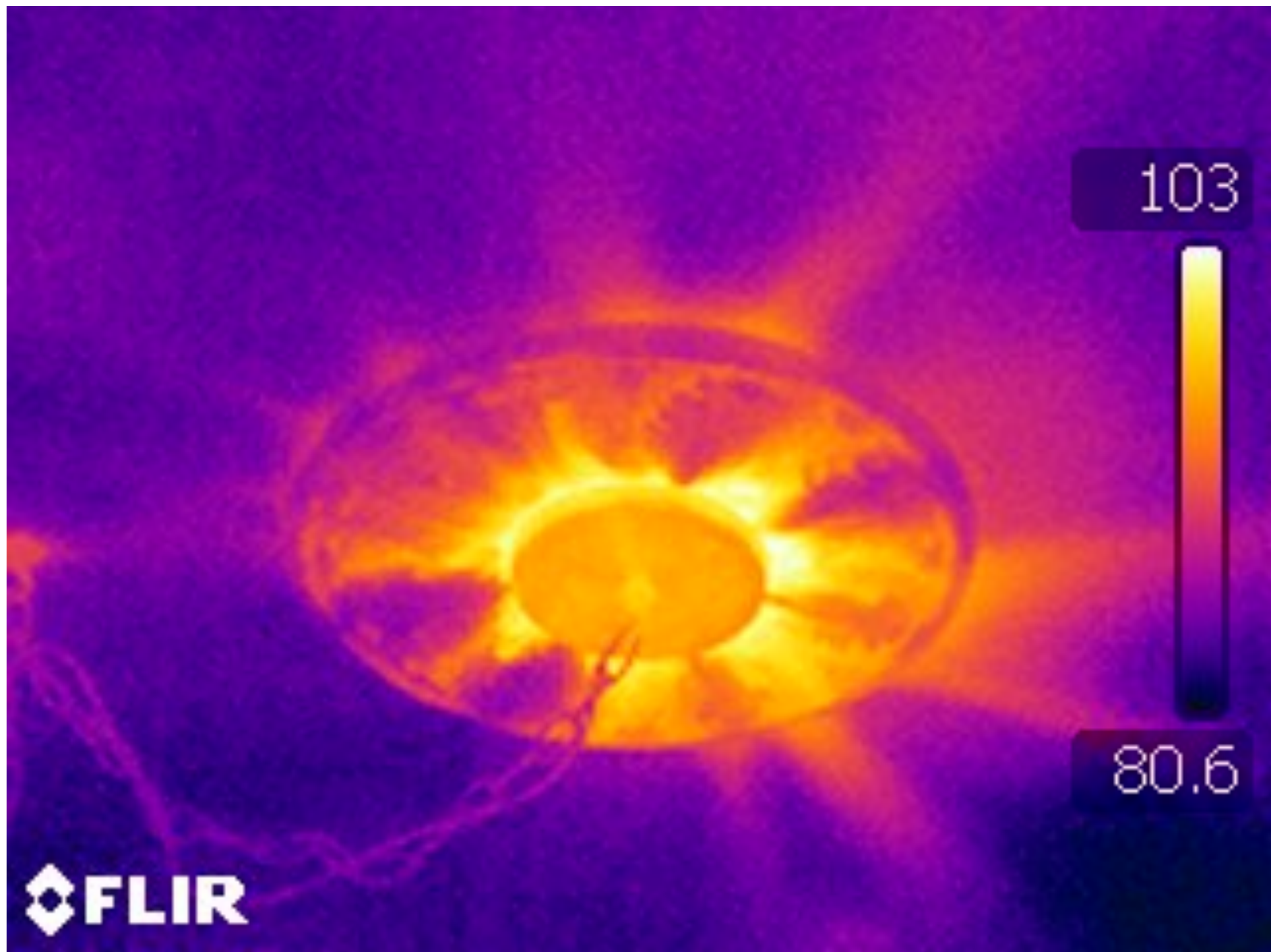


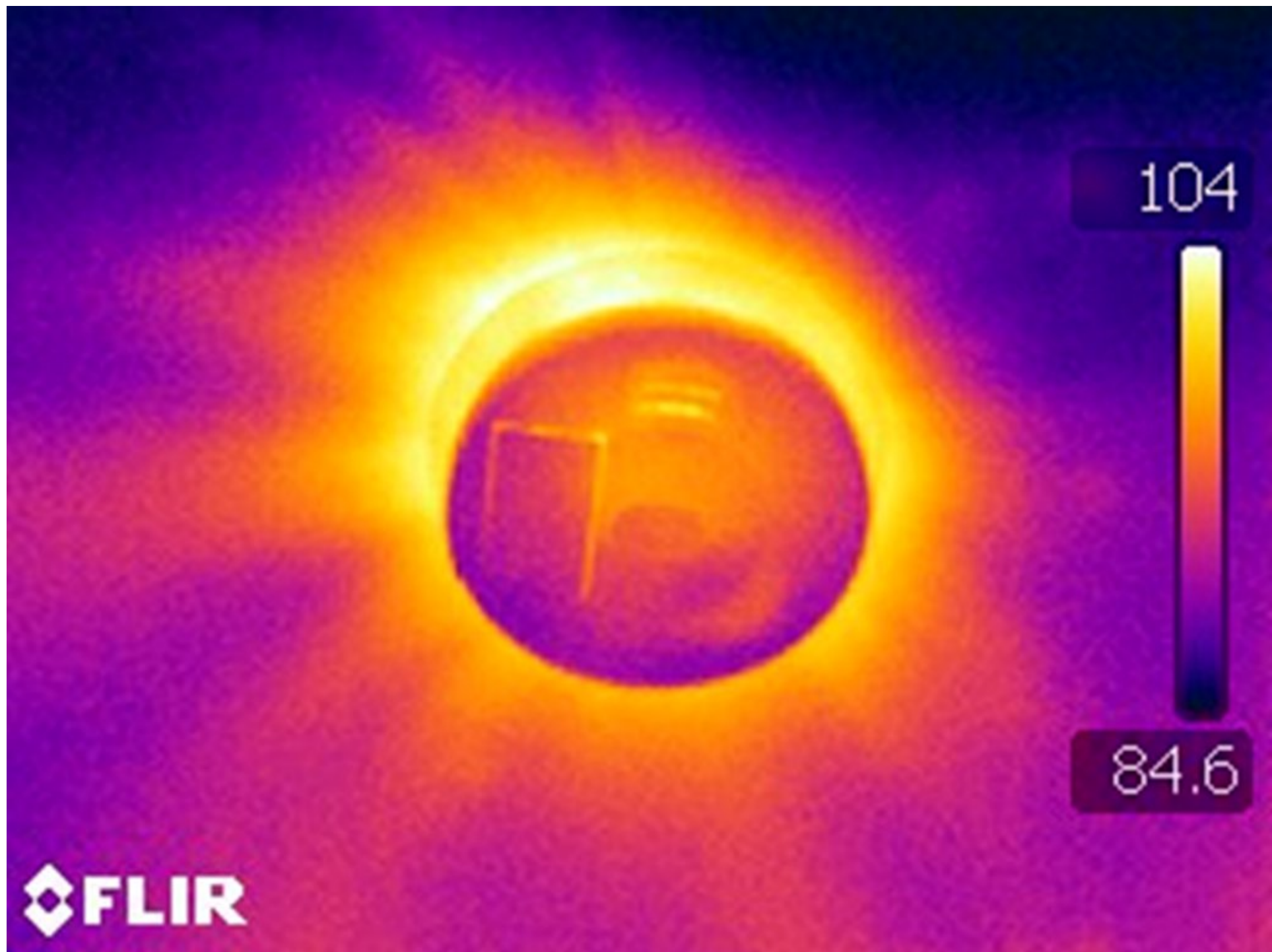














**Smoke Stick**

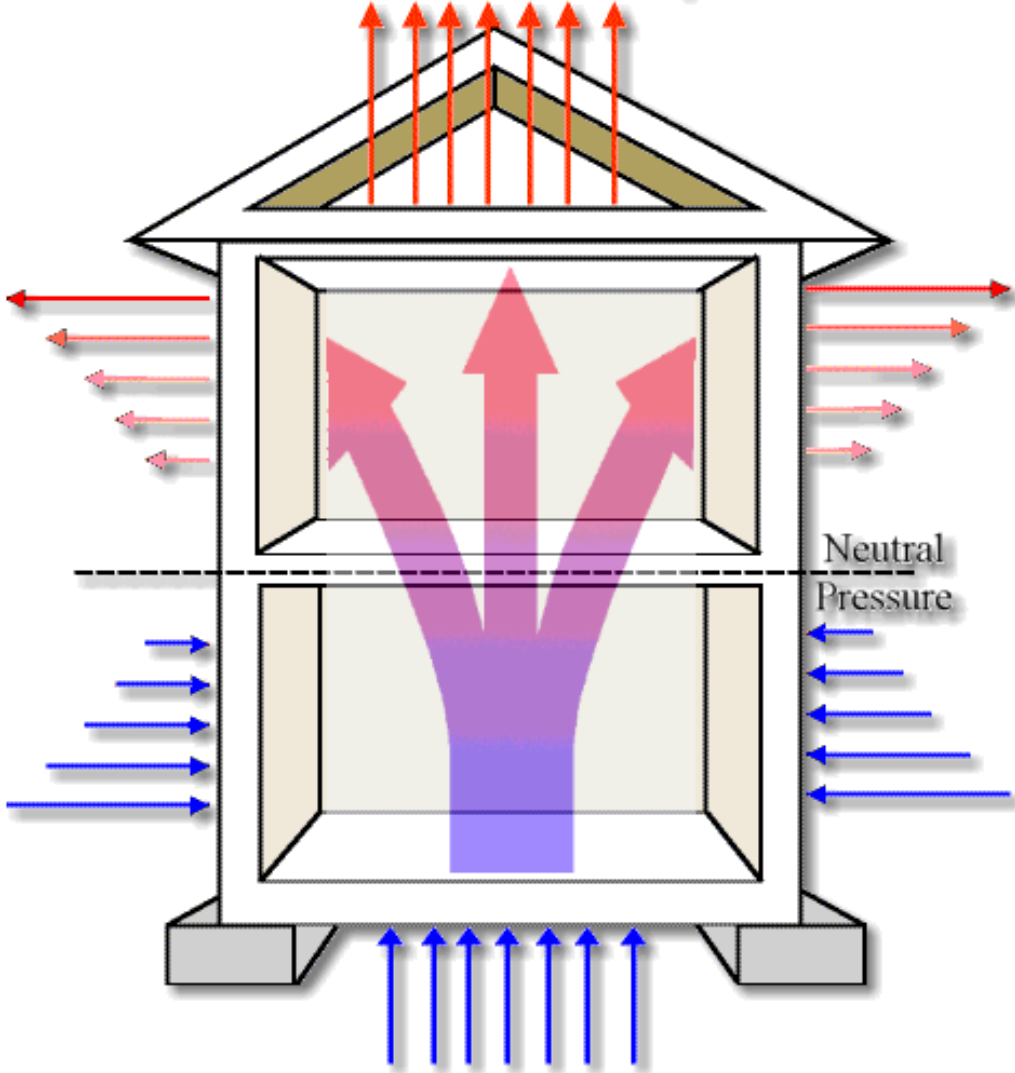




# Stack Effect



Stack Effect in a Two Story House









Up to 60% of make-up air from Crawl Space

# Crawl Space: sealed with moisture barrier















# Insulation: installation defects





# Insulation: properly installed



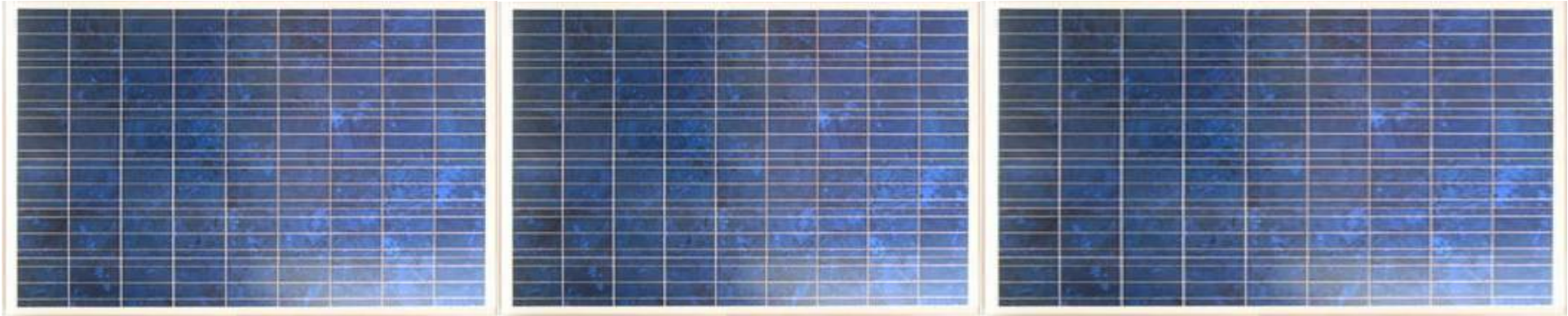
HARTMAN  
BALDWIN  
design/build



Photo courtesy of  
HartmanBaldwin Design/Build







**16 Tons**

# Historic Preservation & Energy Efficiency

- Leave historic windows alone
- Reduce the size of Solar PV Panels



**6 Tons**

# BENEFITS OF HOME PERFORMANCE

- Comfort
- Indoor air quality
- Avoidance of Carbon Monoxide poisoning
- The value of your home is increased up to 9%
- Save money immediately on energy bills
- Save money long-term as rates increase
- More value from Solar / get to net-zero
- Climate Change *Adaptation* – durable, safer, comfort
- Rebates
- Best opportunity if you need an new HVAC or new Roof
- Best opportunity if you need to refinance your home



# BENEFITS OF HOME PERFORMANCE

- HP upgrades use less complicated, less expensive equipment with readily available parts
- Stimulates the LOCAL economy with jobs and business growth in your community
- ROI and Annuity, Negative cost
- Energy Independence – National
- Energy Independence – California
- Enhances the competitive edge of the U.S. against other countries such as China, Germany,
- Climate Change *Mitigation* GHG reduction
- Nega-Watts keeps utility prices lower
- HP Upgrades major component of AB32 and City energy reduction goals for our State



# WHO WE ARE

Community Home Energy Retrofit Project



## Sustainable Claremont

Working for Environmental  
Economic and Social Sustainability

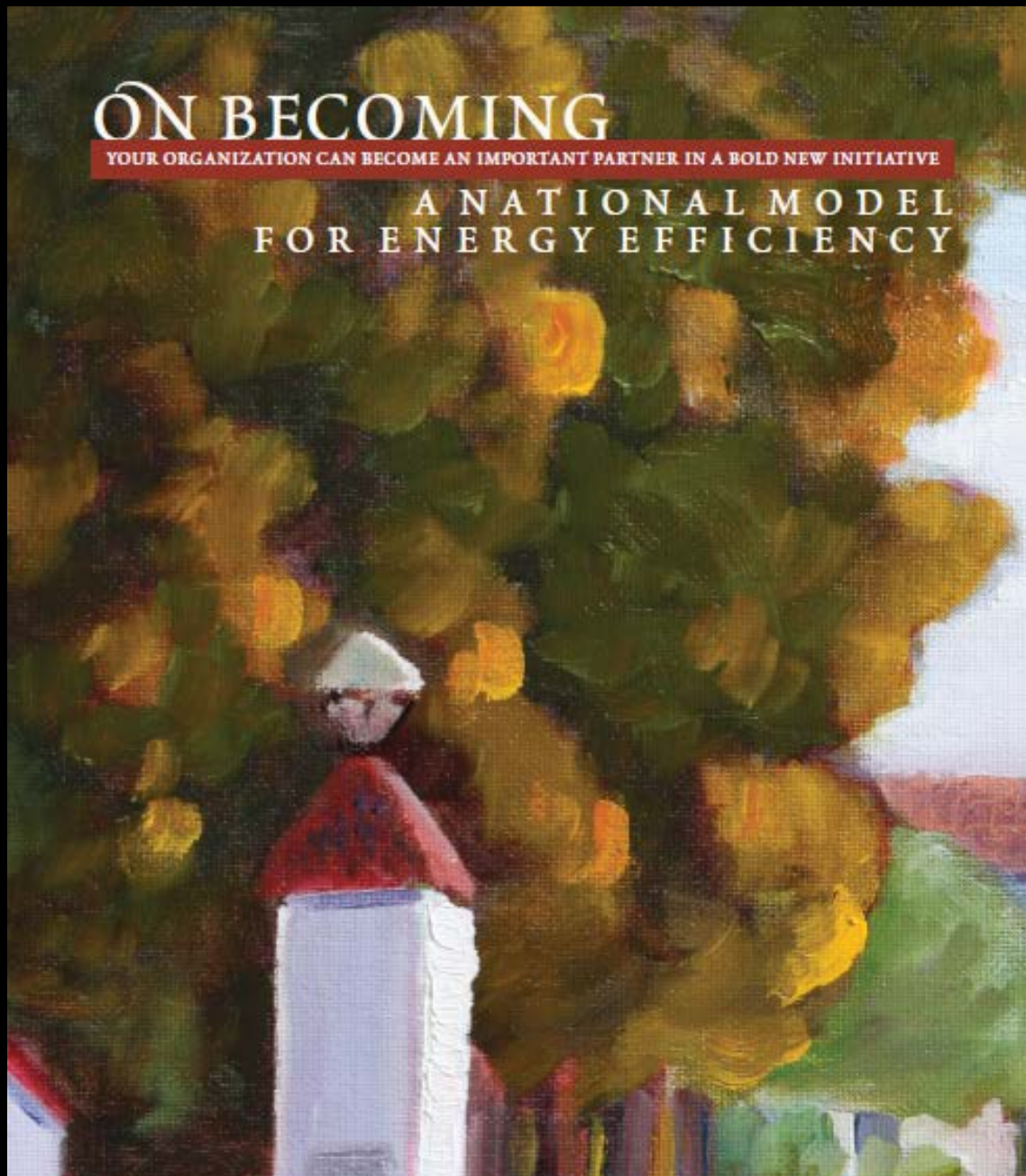
energy  champion



# ON BECOMING

YOUR ORGANIZATION CAN BECOME AN IMPORTANT PARTNER IN A BOLD NEW INITIATIVE

A NATIONAL MODEL  
FOR ENERGY EFFICIENCY



## PILGRIM PLACE

# CG-REP: Certified Green Real Estate Professional



A`Cuara Appraisal  
Certified Residential Appraisals  
*We value your property more than you do*



Adrian • Gaus Architects



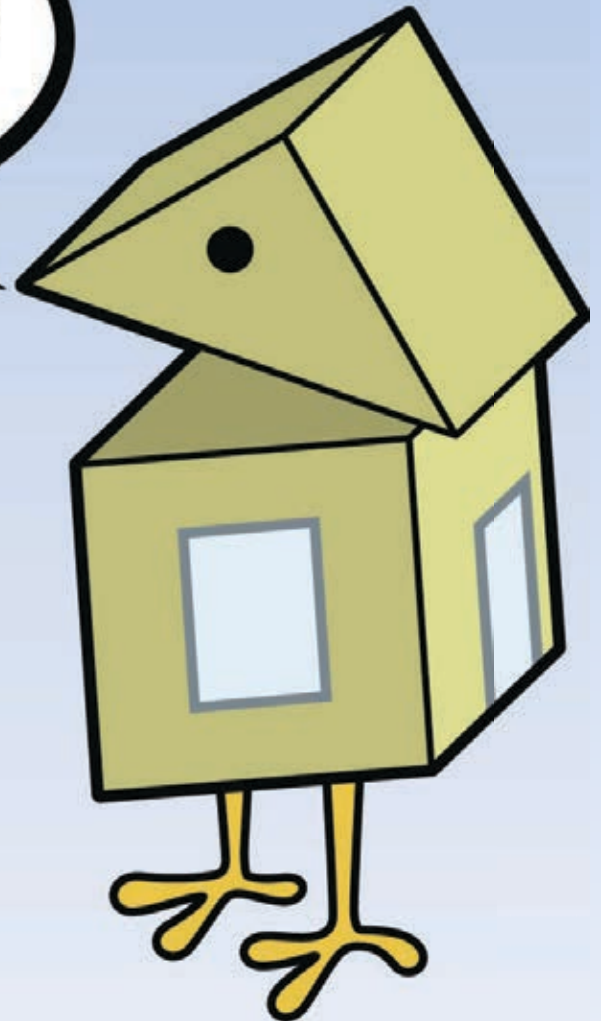
# PHASE II GOAL: 1,300 HOMES!

**CHERP**

For this we need to -

**ENGAGE**

**EVERYONE**







**“Climate Elephant”** by Daniel Dancer – New Delhi, India

Photo Credit: DDancer / artforthesky.co



# ENGAGE EVERYONE

## New Cities and Community Organizations

### Community Home Energy Retrofit Project

CHERPclaremont, CHERPredlands, CHERPcucamonga

### Phase II Goals:

**1,300 Homes**

**5 new CHERPs**





**Hartman Energy  
Strategies**

The Business of  
Efficiency

Devon Hartman | Principal

devon@HartmanEnergyStrategies.com | 909.721.8631

**CHERPclaremont.org**



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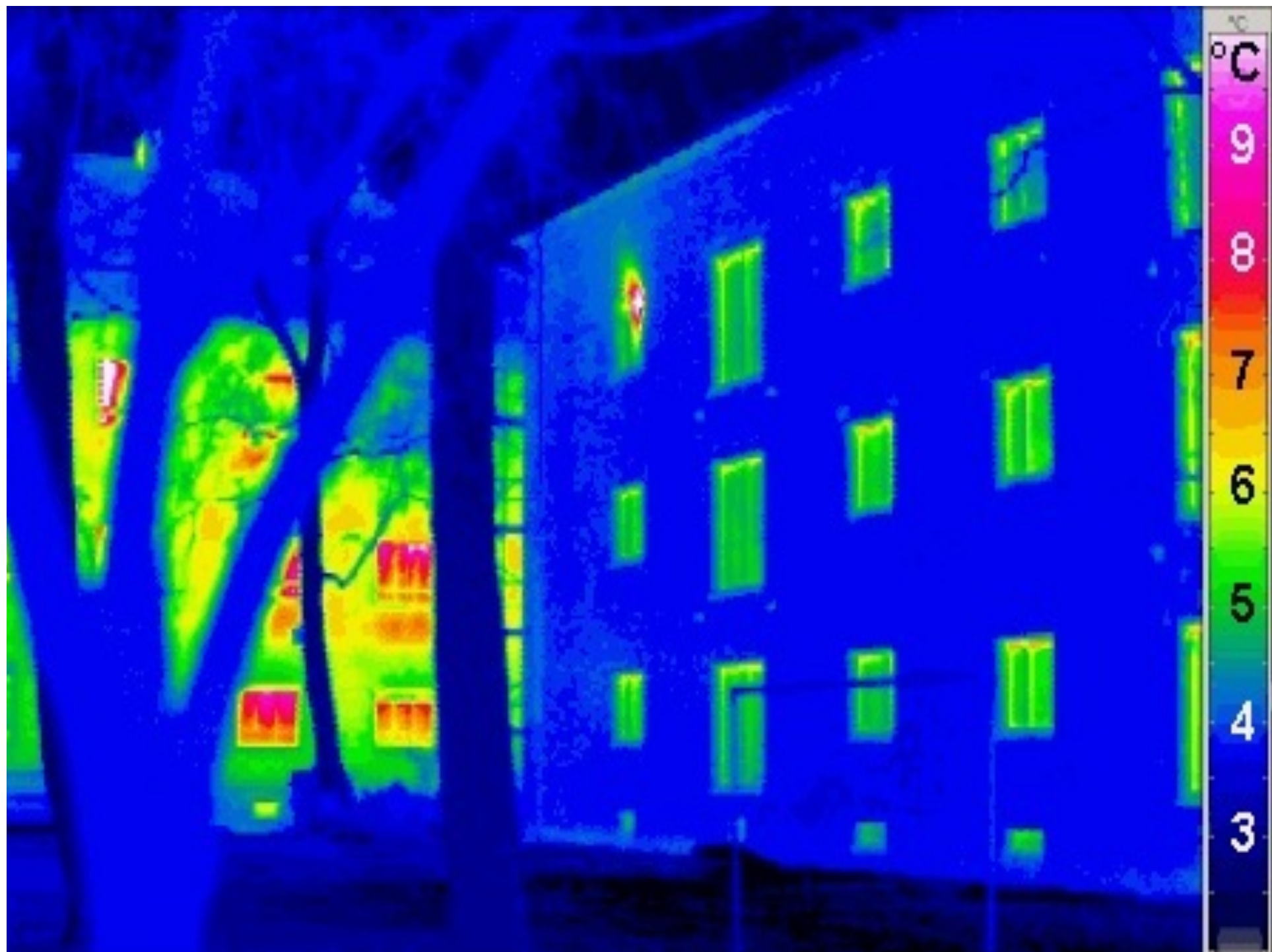
# WHAT YOU CAN DO NOW!

- **Stay in touch with us: [CHERPclaremont.org](http://CHERPclaremont.org)**
- **Sign up for a Green Point Rating before Jan. 31<sup>st</sup> - up to \$2,000 value**
- **Tell 2 friends and family about the opportunity immediately**
- **Next CG-REP for Realtors coming soon! Watch the website.**
- **Schedule an energy Audit with a Contractor here**



# Home Performance Contractors





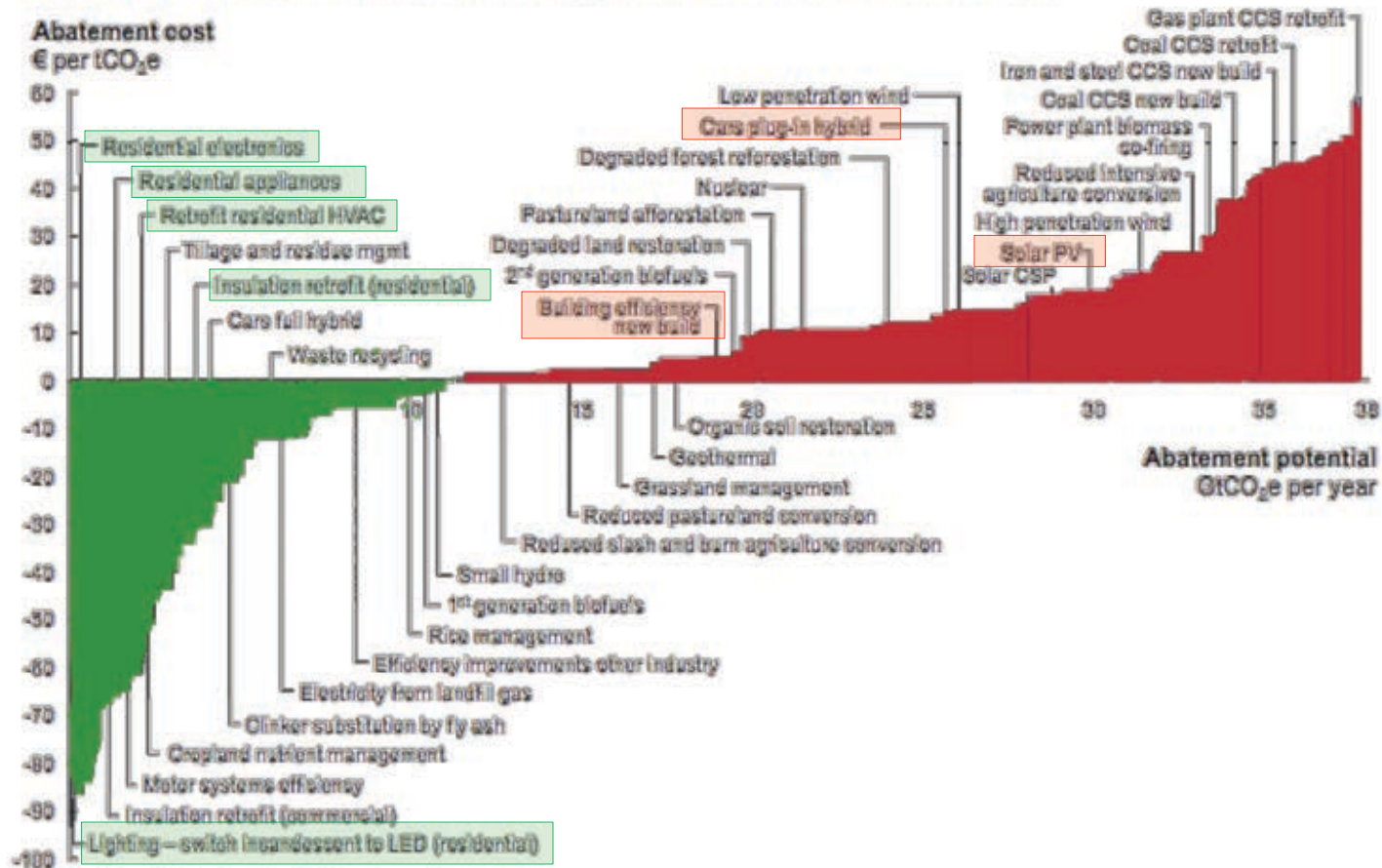




**First Green Point Rated Historic Building in California**

# McKinsey – Negative Cost

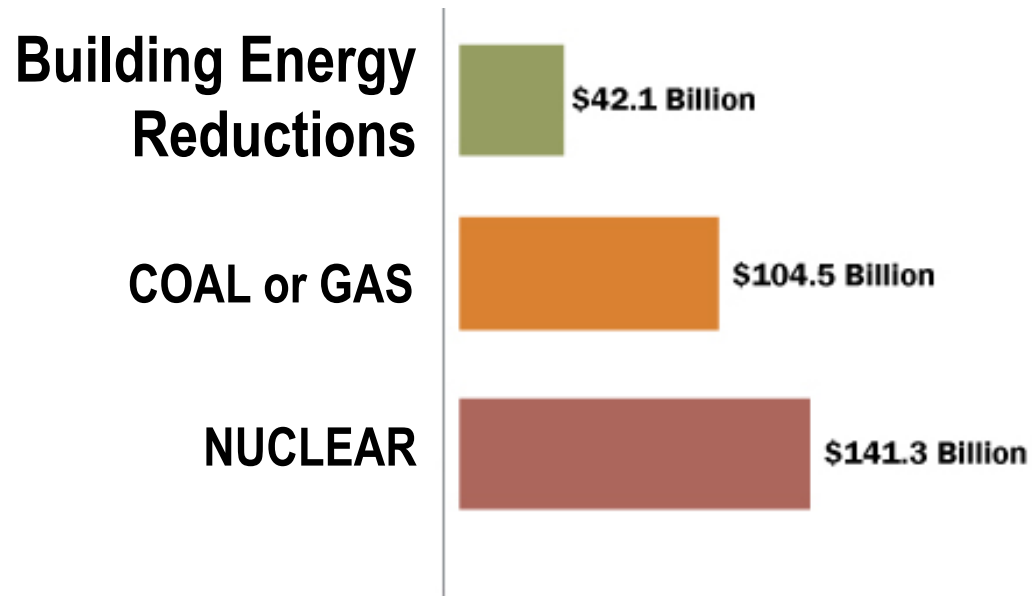
Global GHG abatement cost curve beyond business-as-usual – 2030



Note: The curve presents an estimate of the maximum potential of all technical GHG abatement measures below €50 per tCO<sub>2</sub>e if each lever was pursued aggressively. It is not a forecast of what will be done as different abatement measures and technologies will play out.  
 Source: Global GHG Abatement Cost Curve v2.0

# Two ways to create Energy

## 1. Build new    2. Efficiency



**Cost of 1QBtu Delivered Energy**

Source: ©2010 2030, Inc. / Architecture 2030. All Rights Reserved.  
Data Source: DOE, EIA, McKinsey & Company. Updated Oct. 2010.

# NEGA-Watts