

Sustainability and Historic Preservation: Its Meaning and Practical Applications

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California Office of Historic Preservation

AEP/APA/AICP Panel Discussion

Concord CA
April 20, 2010



IN THIS PRESENTATION:

- **HISTORIC BUILDING CONTRIBUTION**
- **DIAGNOSIS AND RETROFIT**
- **THIRD PARTY CERTIFICATION**
- **VOLUNTARY AND MANDATORY POLICIES**
- **FINANCING**
- **CASE STUDIES**

HISTORIC BUILDING CONTRIBUTION

National Historic Building Inventory

AREA: Non-Residential Buildings



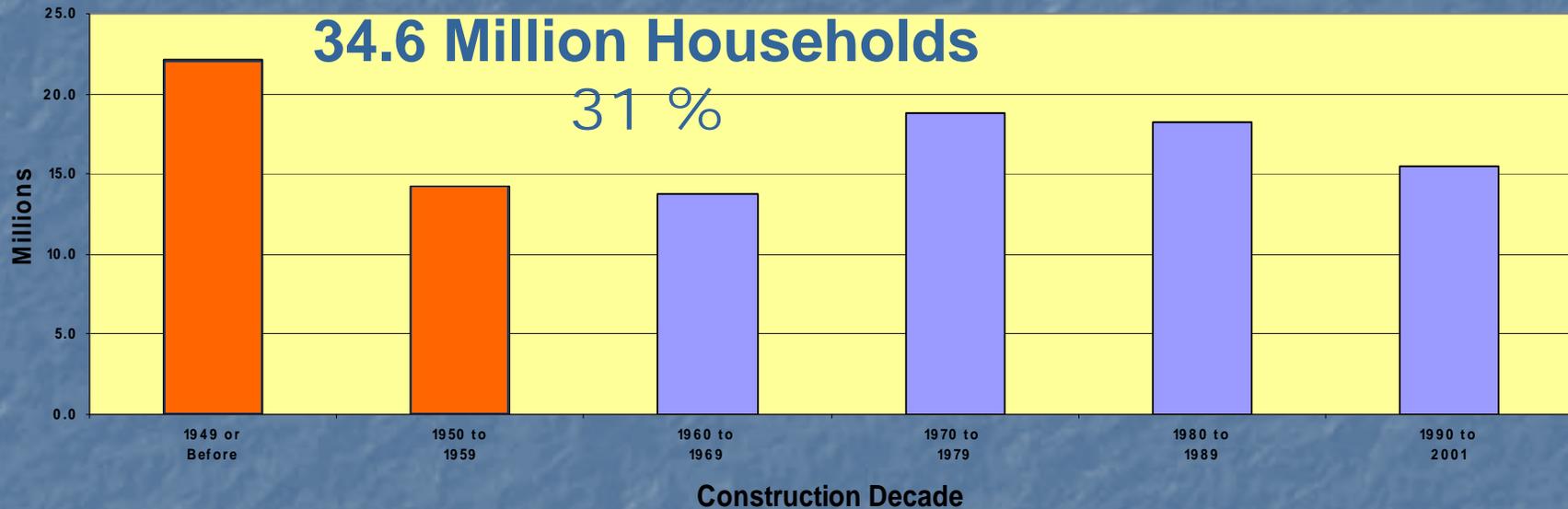
California 21%

Commercial Building Inventory
Department of Energy

HISTORIC BUILDING CONTRIBUTION

National Historic Building Inventory

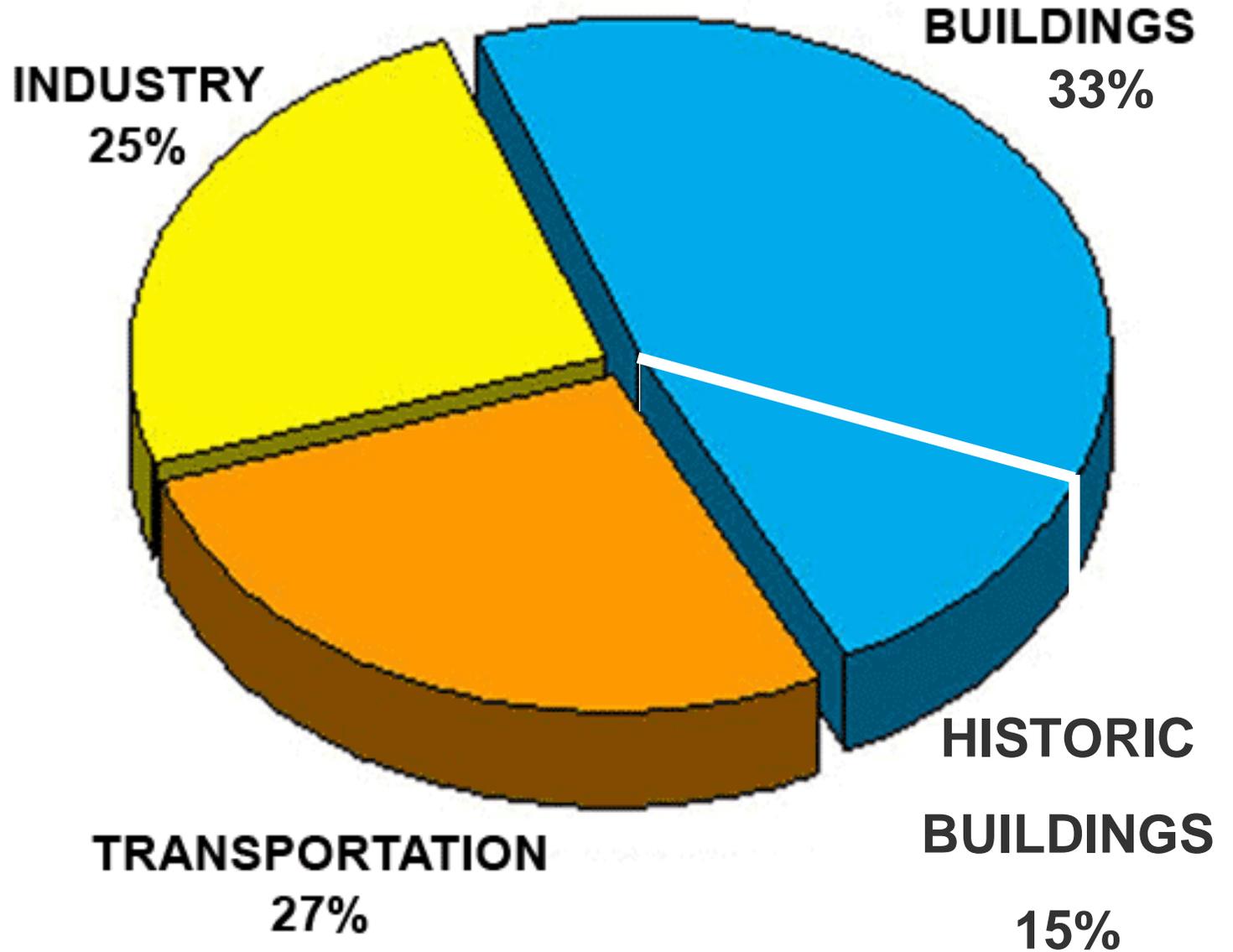
AREA: Residential Buildings



California 24%

Residential Building Inventory
Department of Energy

HISTORIC BUILDING CONTRIBUTION



US ENERGY CONSUMPTION

HISTORIC BUILDING CONTRIBUTION

OPTIONS for **ENERGY EFFICIENCY** in **EXISTING BUILDINGS**



COMMISSION REPORT

December 2005
CEC-400-2005-039-CMF

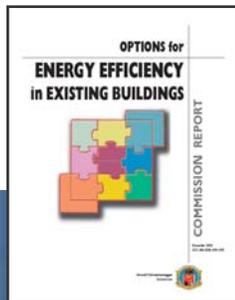
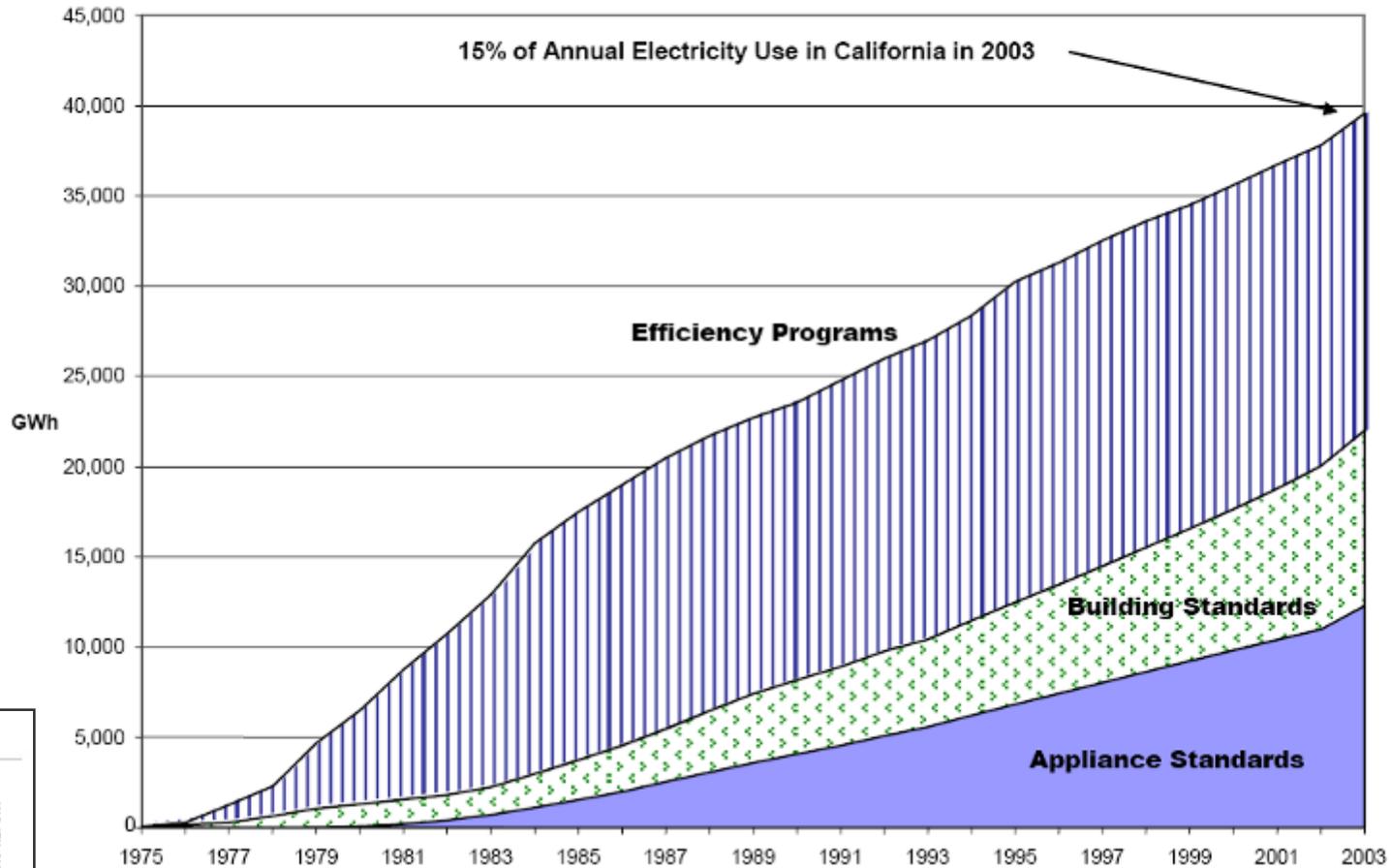
Arnold Schwarzenegger
Governor



HISTORIC BUILDING CONTRIBUTION PAST CALIFORNIA ENERGY EFFICIENCY POLICIES

Figure ES-1

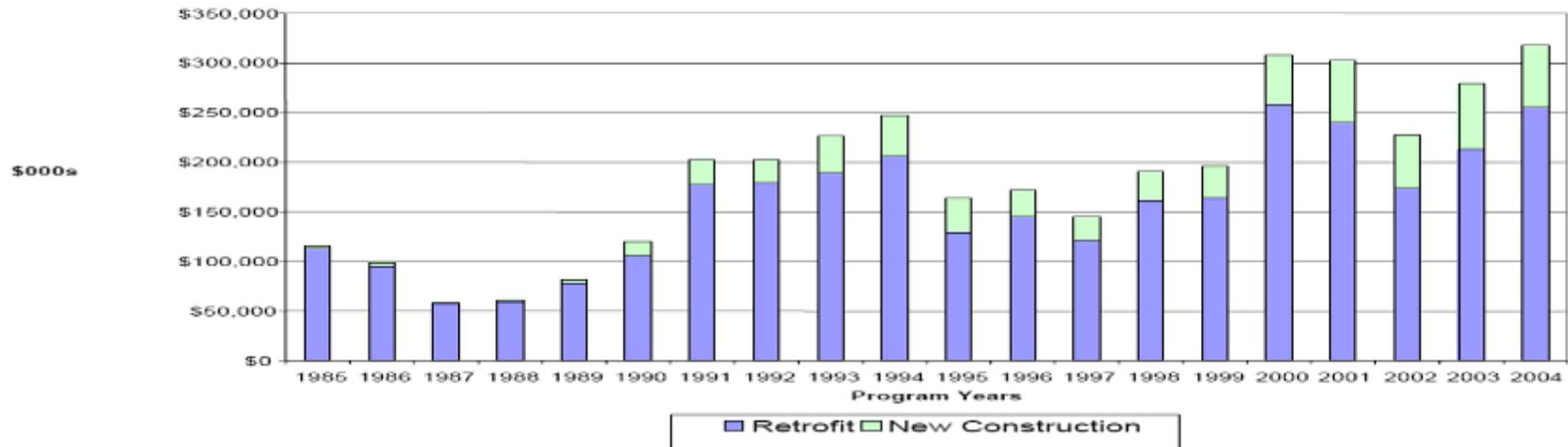
Cumulative Energy Savings of California Standards and Energy Efficiency Programs



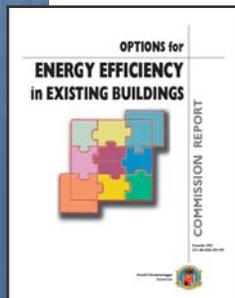
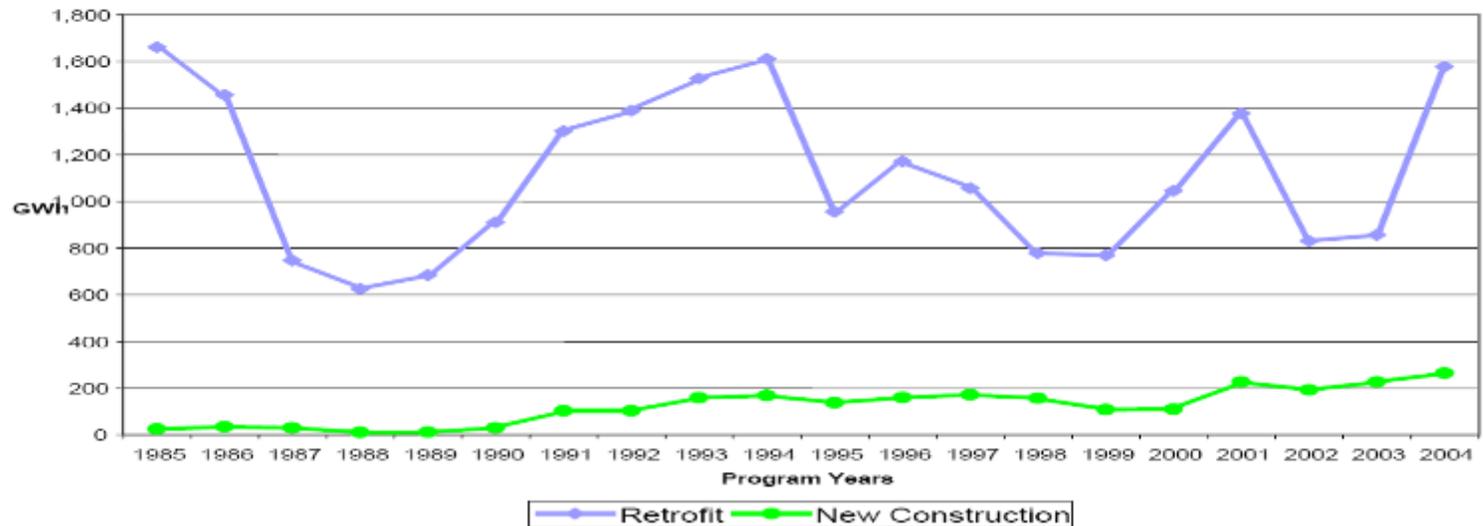
PAST CALIFORNIA ENERGY EFFICIENCY POLICIES

Figure 2-1

Annual Spending by PG&E, SCE, and SDG&E For Energy Efficiency Programs



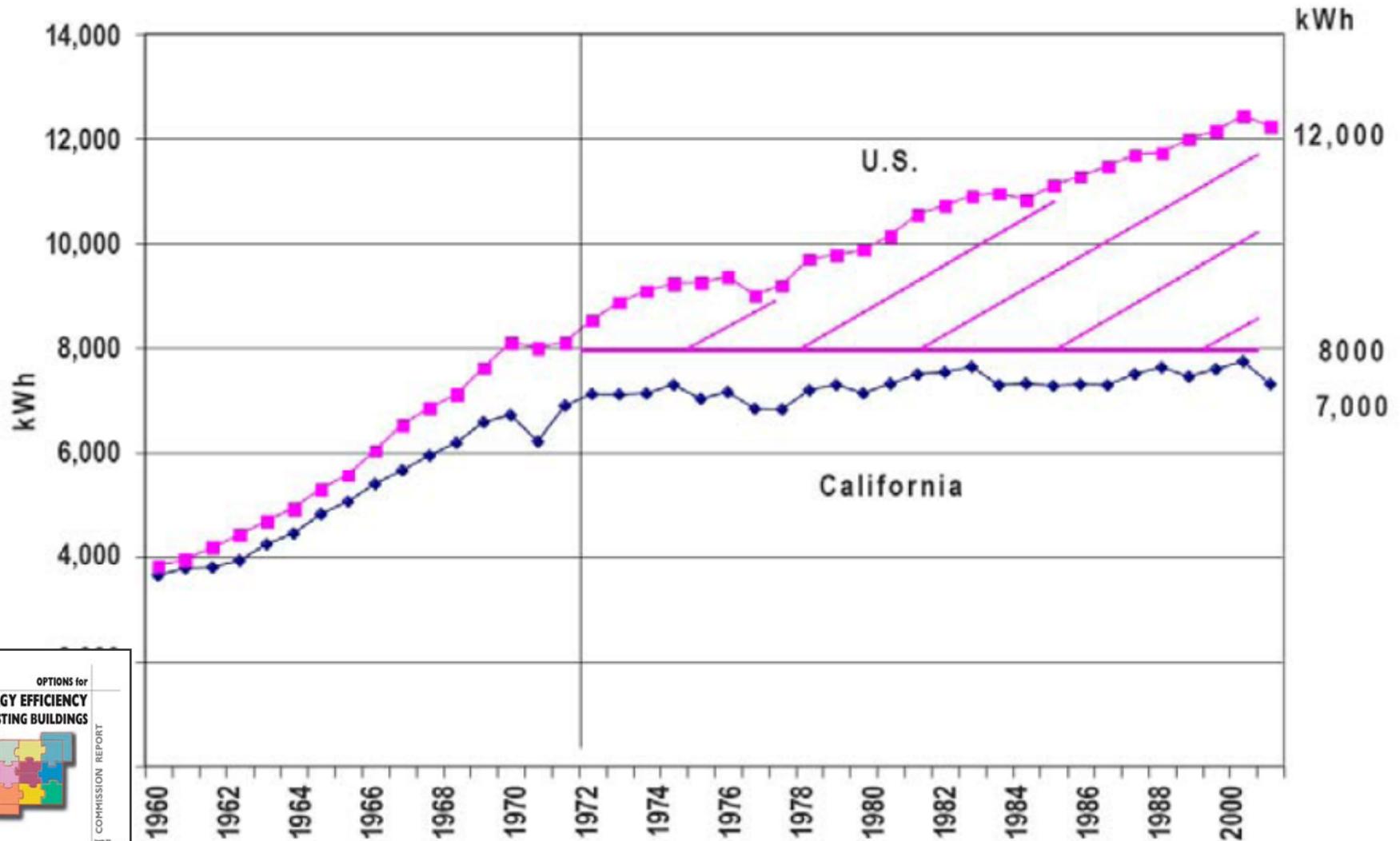
First Year Savings for Retrofit and New Construction Sectors for PY 1985-2004



PAST CALIFORNIA ENERGY EFFICIENCY POLICIES

Figure ES-2

Total Electricity Use, per capita, 1960 - 2001



OPTIONS for
ENERGY EFFICIENCY
in EXISTING BUILDINGS



COMMISSION REPORT



HISTORIC BUILDING CONTRIBUTION

Source: Total Energy Consumption in US Households by Year of Construction
<http://www.eia.doe.gov/emeu>

Average annual energy consumption units/Household

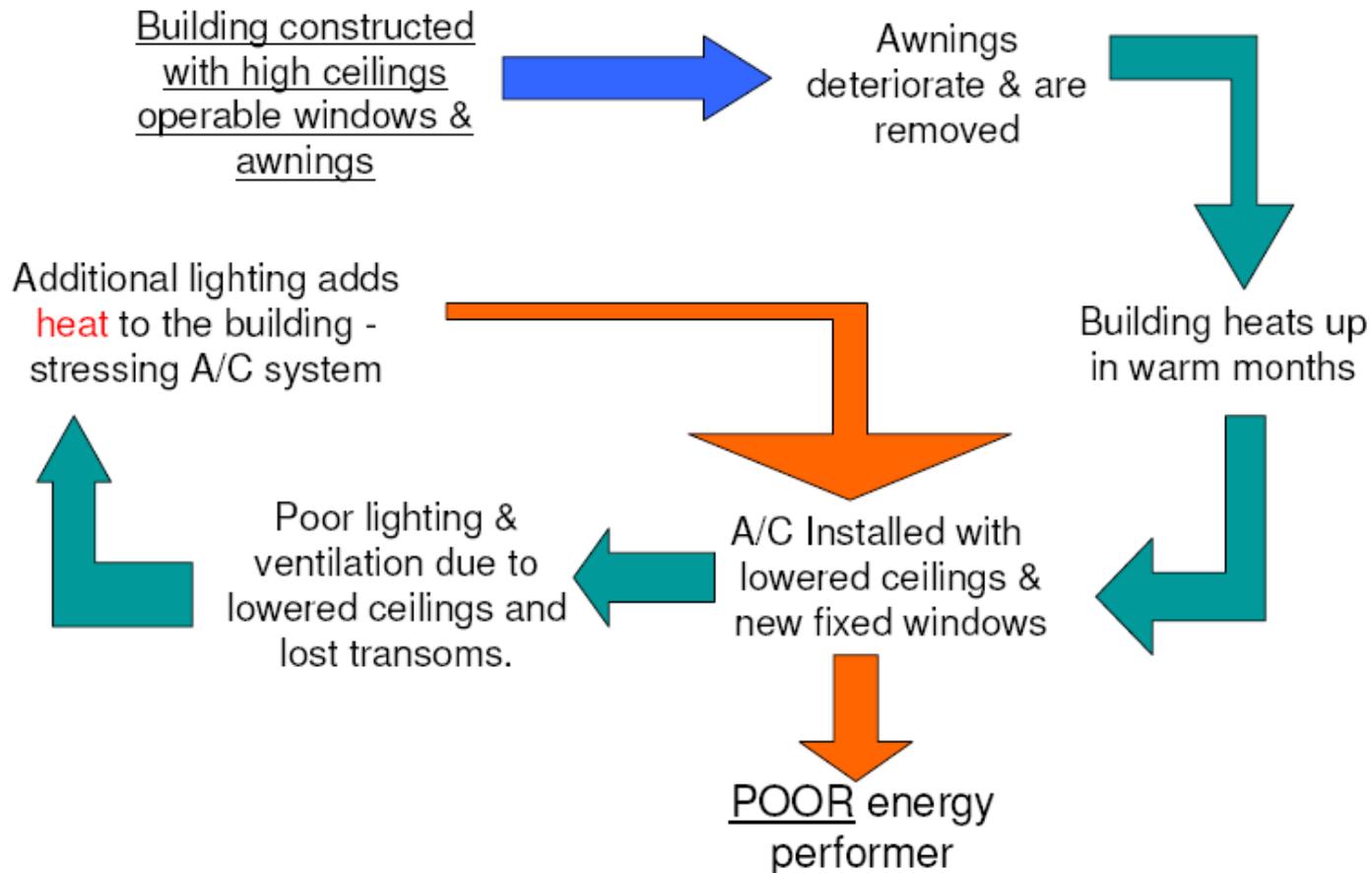
Decade built	kWh	kcf (gas)
Before 1949	8,332	82
1950 – 1959	9,533	71
1960 – 1969	9,586	63
1970 – 1979	11,971	61
1980 – 1989	12,534	63
1990 – 2001	10,656	70

PERCEIVED ENERGY INEFFICIENCY

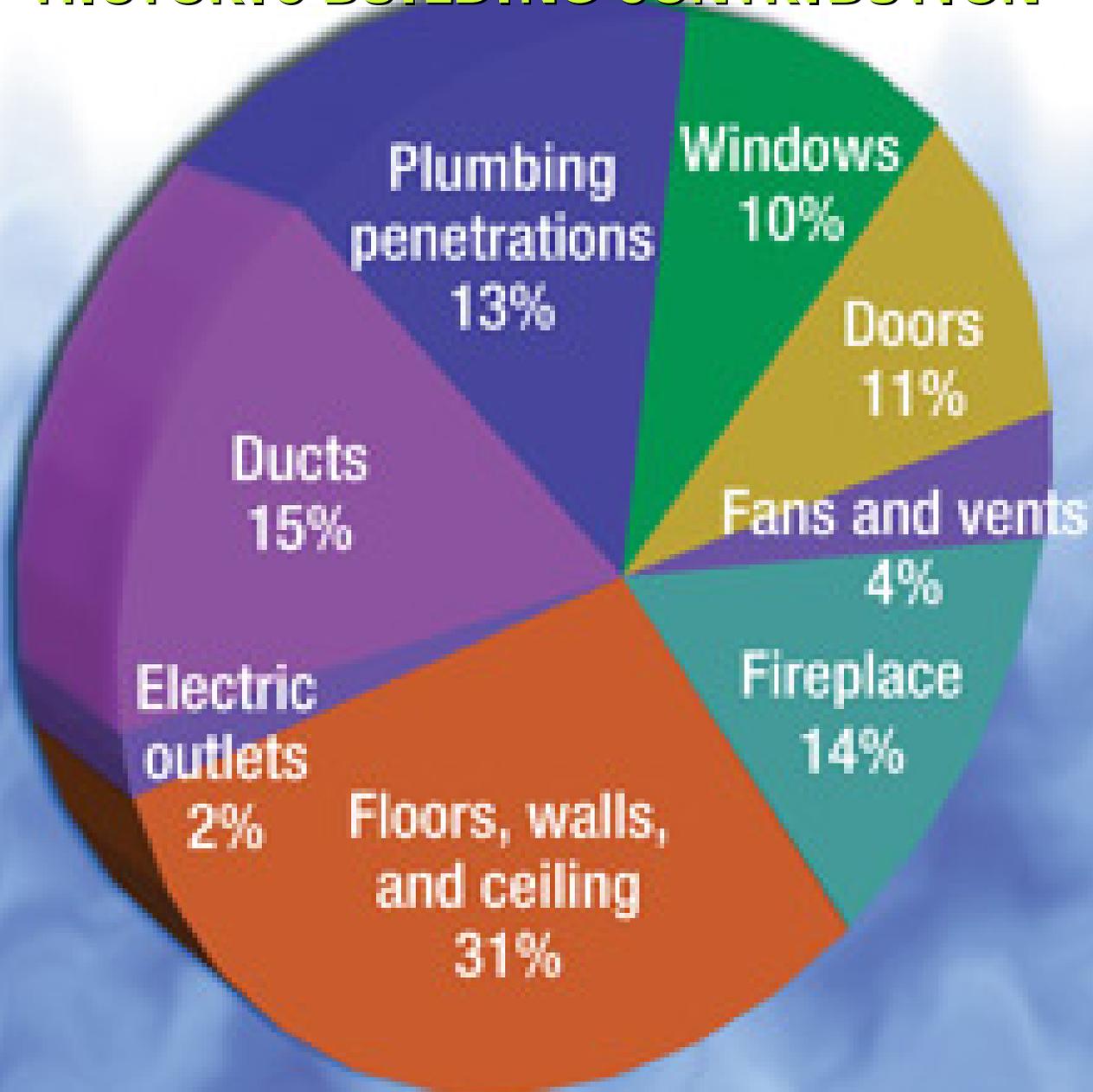
HISTORIC BUILDING CONTRIBUTION

Historic Energy & Atmosphere

Minimum Energy Performance:



HISTORIC BUILDING CONTRIBUTION



HISTORIC BUILDING CONTRIBUTION

Title 24 Part 8

2007 California Historical Building Code

California Code of Regulations
Title 24, Part 8

California Building
Standards Commission

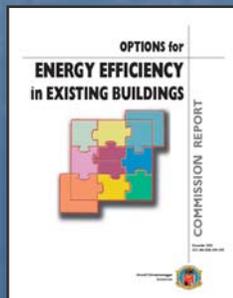
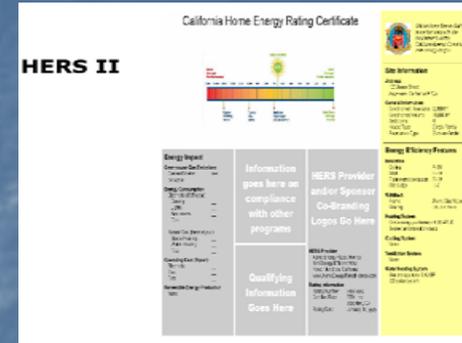


2007 8-901.5 Energy conservation. Qualified historical buildings or properties covered by this part are exempted from compliance with energy conservation standards. When new non-historical lighting and space conditioning system components, devices, appliances and equipment are installed, they shall comply with the requirements of Title 24, Part 6, *The California Energy Code*, except where the historical significance or character-defining features are threatened.

2001 8-901.5 Energy conservation. Historical buildings covered by this part are exempted from compliance with energy conservation standards. When appliances and equipment are added, they should comply with the regular code.

IDENTIFY ENERGY DEFICIENCIES

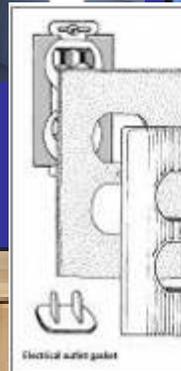
- Time of Sale Information Disclosure by 2010
 - Includes Home Energy Ratings System score
- Information Gateway
 - Utility efficiency information clearinghouses that
 - inform homeowners of energy efficiency actions, programs and services
 - Targets high peak demand and high energy-use homes
 - Facilitates residential benchmarking
- Integrated Whole Building Diagnostic Testing and Repair
 - Finds and corrects flaws in construction or operation
 - Increases energy efficiency and health and comfort
- Assistance to Affordable Housing
 - Triggered at rehabilitation and equipment replacement
- Equipment Tune-Ups
 - Increased frequency and effectiveness of HVAC system tune-ups



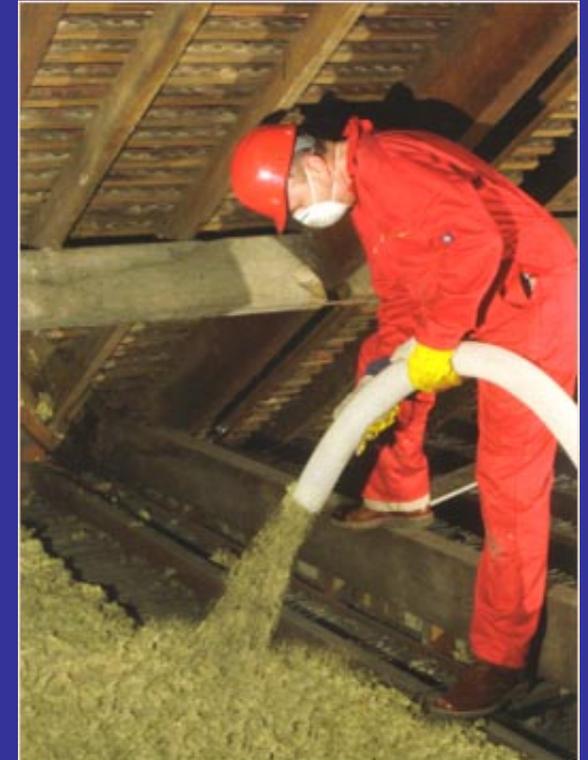
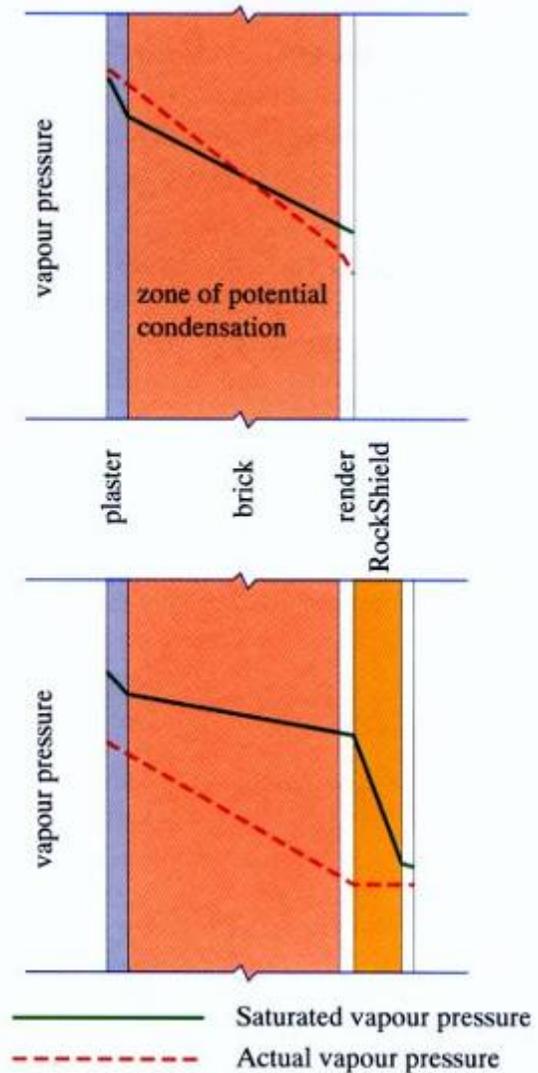
IDENTIFY ENERGY DEFICIENCIES



REPAIR ENERGY DEFICIENCIES



Condensation Control



REPAIR ENERGY DEFICIENCIES

sustainable solutions for historic houses in northern california

a voluntary green code & green rehabilitation manual



Treatment standards for historic properties

Structural details

Preserving exterior details

Insulating for improved energy performance

Upgrading heating and ventilation

Plumbing improvements

Electrical & lighting systems

Sustainable materials for interior finish

Landscaping recommendations

THIRD PARTY ENERGY CONSERVATION PROGRAMS

California Building Performance
Contractors Association

cbpca

**CABEC** California Association of
Building Energy Consultants



February 24, 2009

Environment

Weathering The Times: Stimulus Boosts Green Jobs

by Christopher Joyce

 [Listen Now](#) (4 min 49 sec) + add to playlist



John W. Poole/NPR

The stimulus funds should boost business for people like Bob Logston. His company, Home Energy Loss Professionals, retrofits homes to save energy and money.

Weatherizing Your Home

Check out tips from the Maryland Energy Administration for saving energy and money by [weatherizing your home](#).

Learn more about getting financial assistance to weatherize your home from the [U.S. Department of Energy](#).

All Things Considered, February 23, 2009 · People in the business of weatherizing homes are expecting to profit from the new economic stimulus plan. The federal aid package sets aside \$5 billion worth of spending for making homes and buildings more energy efficient. The idea is to save energy, create jobs — and even perhaps slow global warming.

That's good news for people like Malcolm Woolf, who runs the Maryland Energy Administration. It's a small office with a small staff, and they've started a new program to train people in need of work how to weatherize homes, such as installing weatherstripping around doors, insulating attics and basements, or making heating and cooling systems more efficient.

"We are training folks every week to become home energy retrofit professionals," says Woolf. "Construction workers can be easily retooled to be air-duct or insulation installers and meet our current needs."

Maryland has also spent hundreds of thousands of dollars over the past 10 months helping low- and moderate-income homeowners pay for retrofitting. The state's energy department will pay up to \$5,000 for qualified families to weatherize.

Woolf expects the federal stimulus package to boost his budget tenfold. That means new work for Bob Logston, whose company, Home Energy Loss Professionals, does a lot of the Maryland program's retrofit work.

"Back in the day, real estate people didn't want people to know that their homes weren't energy efficient," says Logston. "Now, they want people to be more energy efficient."



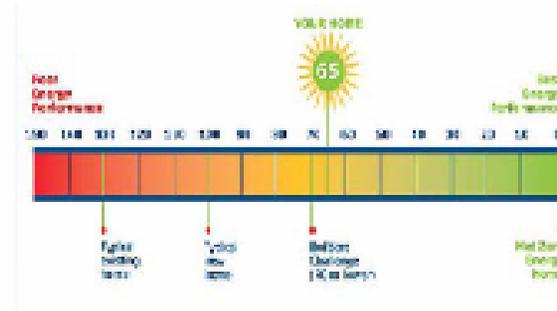
New homeowner Princess Moorman is one of about 50 Marylanders who has qualified for retrofitting for her north Baltimore three-story house. It was built in the 1920s, and although it's been renovated, it's drafty. Moorman says her January heating bill was \$500.

Logston and his three-man crew recently spent a day going over Moorman's house. By running a big exhaust fan that pulls air out of the house, they create a low-pressure zone inside that draws cold air into the house through cracks

THIRD PARTY ENERGY CONSERVATION PROGRAMS

HERS II

California Home Energy Rating Certificate



California Home Energy Rating
 It conforms with the
 requirements of the
 California Energy Commission
www.energy.ca.gov

Site Information

Address
 100 Jones Street
 Anywhere, California 94100

General Information

Conditioned Floor Area 2,000 ft²
 Conditioned Volume 10,000 ft³
 Bedrooms 4
 House Type Single Family
 Foundation Type Sub-on-Grade

Energy Efficiency Features

Insulation

Ceiling R-38
 Wall R-19
 Floor over crawl space R-19
 Sill Edge 15"

Windows

Frame 2 1/2 in. Glaz Wood
 Glazing Double-pane

Heating System

Condensing gas furnace 0.95 AFUE
 Sealed and distribution ducts

Cooling System

None

Ventilation System

None

Water Heating System

Gas storage tank 0.62 EF
 125 gallon system

Energy Impact

Greenhouse Gas Emissions
 Carbon Dioxide 100
 tons/year

Energy Consumption

Electricity (kWh/year)
 Cooling —
 Lights —
 Appliances —
 Total —

Natural Gas (therms/year)

Space Heating —
 Water Heating —
 Total —

Operating Cost (Year)

Electricity —
 Gas —
 Total —

**Renewable Energy Produced or
 None**

Information
 goes here on
 compliance
 with other
 programs

HERS Provider
 and/or Sponsor
 Co-Branding
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Qualifying
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HERS Provider

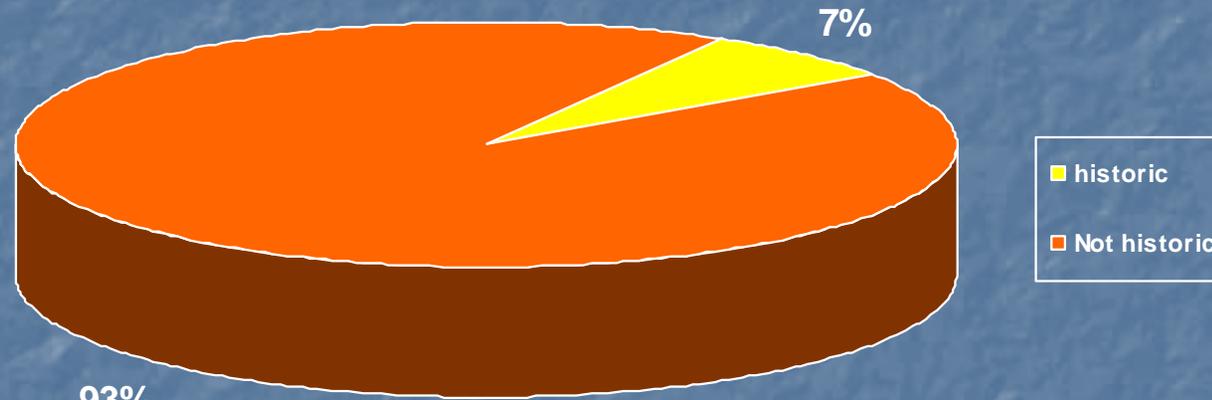
Aamo Energy Rated Homes
 301 Energy Efficient Way
 Foster, Andron, California
www.AamoEnergyRatedHomes.com

Rating Information

Rating Number 1000 WY
 Certified Rate EER no.
 100000, CA
 Rating Date January 30, 2010

THIRD PARTY ENERGY CONSERVATION PROGRAMS

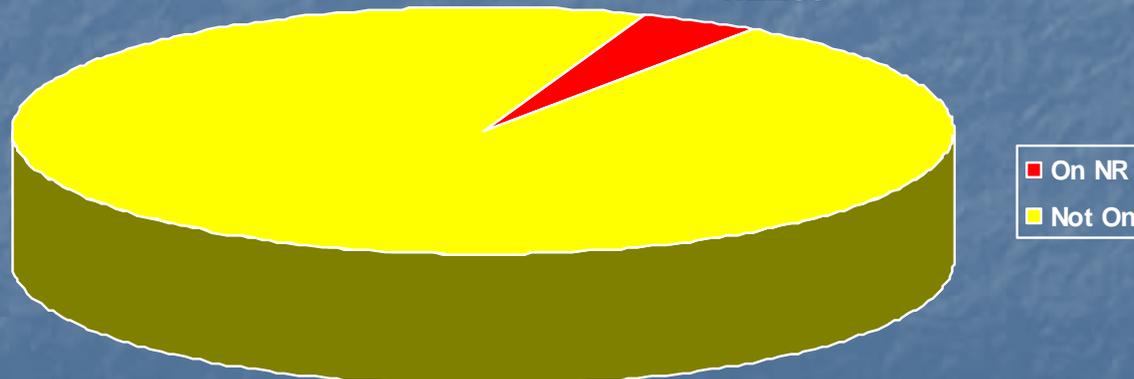
LEED Historic Projects Nationally



93%

LEED historic sites

4.22%



95.78%

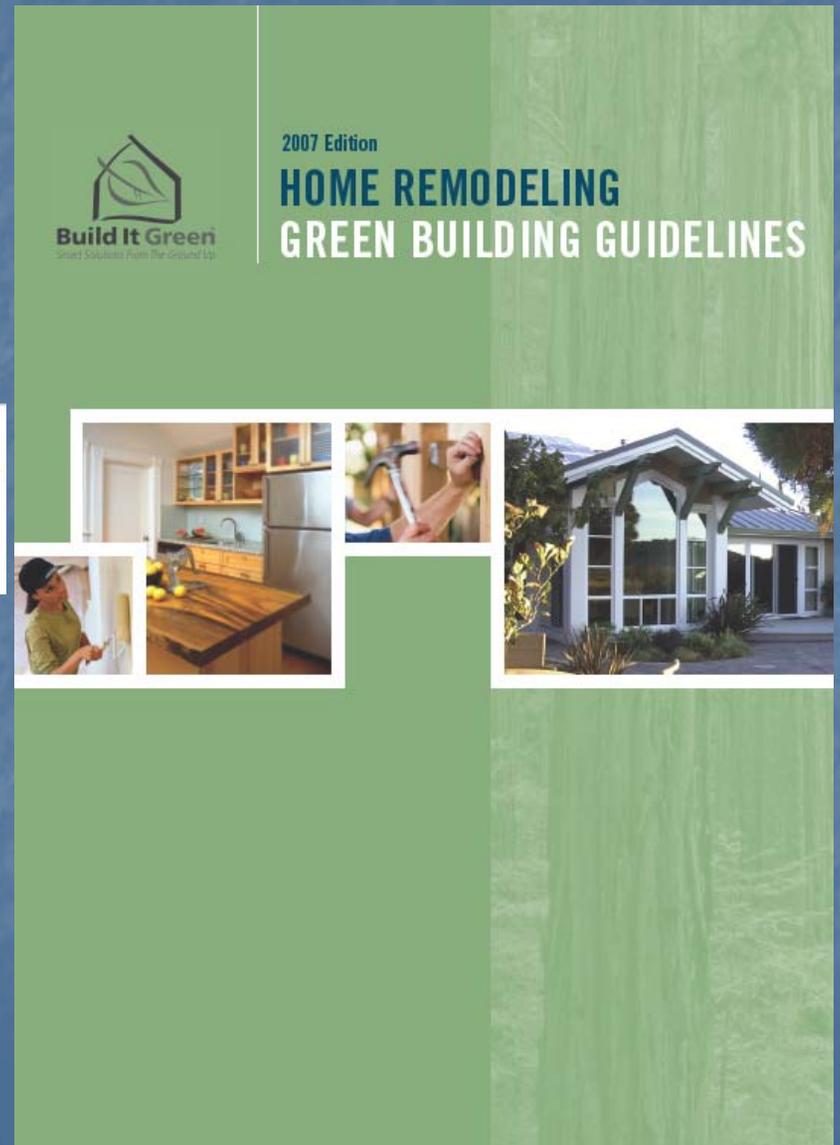
LEED historic sites on N.R.

Source: USGBC LEED Project List – PUBLIC (2-1-08).xlsx



THIRD PARTY ENERGY CONSERVATION PROGRAMS

- Is applicable to existing and historic homes
- Modular: Project can be a whole house renovation or can apply to be an “Element” where a part of the home is remodeled and evaluated, for later inclusion in a whole house rating.
- Minimum rating scale of 50 points for whole house, 25 points for an ‘Element’.
- Can use either a prescriptive (checklist) or performance method



VOLUNTARY/MANDATORY REGULATIONS

Local Ordinances

SAN FRANCISCO MODEL GREEN ORDINANCE

The [San Francisco Green Building Ordinance Chapter 13c](#) is notable in that:

- It discourages demolition by increasing subsequent construction to increase the required LEED points by 10% or increases GreenPoint Rated™ points by 25.
- It further discourages demolition by adding one credit for LEED MR3, MR4, MR5, MR6, or MR7; two credits in 2012.
- Additional points or credits are granted for retention and in-situ reuse or restoration of certain character-defining features that conform to the [Secretary of the Interior's Standards](#).
- Exemptions are granted if the Director determines that compliance would impair the structure's integrity.

VOLUNTARY/MANDATORY REGULATIONS

Local Ordinances

PALO ALTO MODEL GREEN ORDINANCE

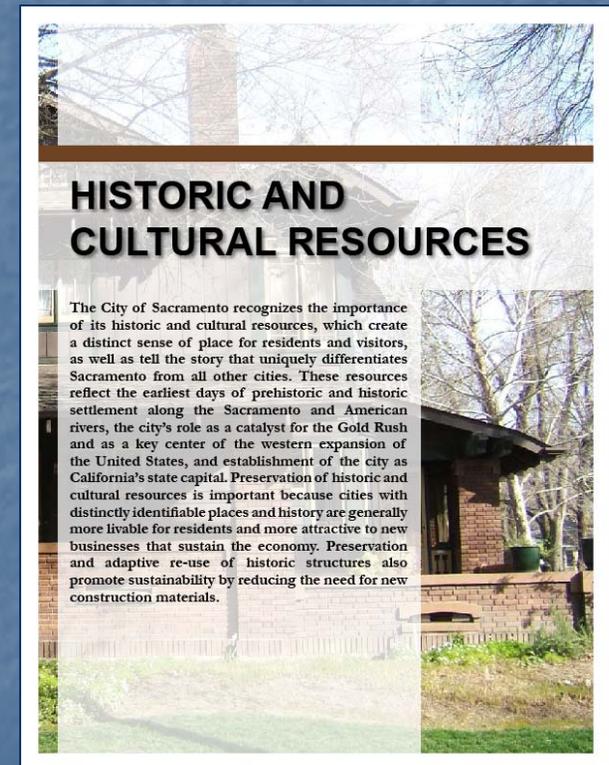
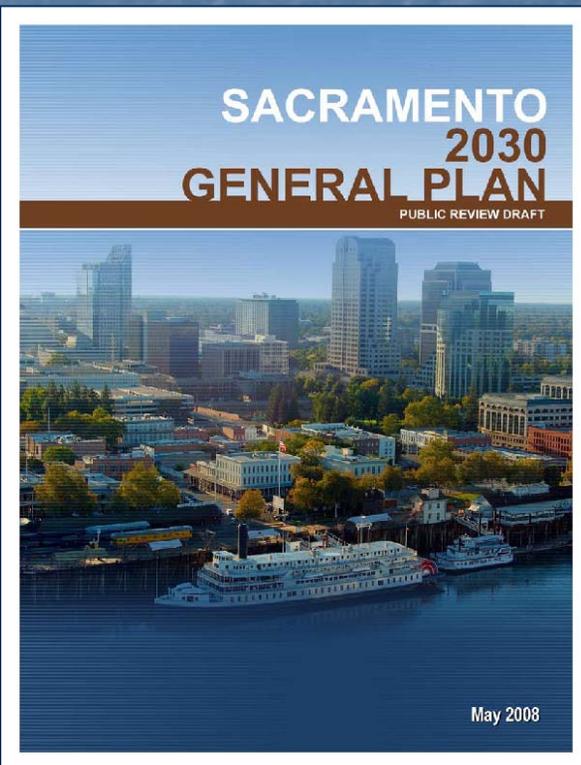
The [Palo Alto Green Building Ordinance](#) is notable in that:

- It recognizes the embodied energy in existing buildings.
- It reduces the number of GreenPoint Rated™ checklist points by up to 20 points in residential projects that are designated on the City's Historic Inventory, and for structures eligible for the National Register of Historic Places, provided the proposed construction is found consistent with the [Secretary of the Interior's Standards for Rehabilitation](#).
- Exemptions for compliance may be granted based on a demonstrated conflict between historic preservation goals and sustainability goals.
- Provides for future reports to be written by the Architectural Review Board and others to evaluate the results of the implementation of this ordinance.

VOLUNTARY/MANDATORY REGULATIONS

CEQA AND GENERAL PLANS

ENFORCEABLE MEASURES TO MITIGATE GREENHOUSE GASSES TO BE INCORPORATED INTO GENERAL PLANS



STOCKTON WAS CITED BY A.G. FOR FAILING TO ADDRESS GREENHOUSE GAS REDUCTION IN A 'MEANINGFUL AND CONSTRUCTIVE MANNER' IN JANUARY 2008

FINANCING AB 811/PACE

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[List of CaliforniaFIRST cities and counties »](#)

CASE STUDY SONOMA COUNTY

**SONOMA COUNTY
RETROFIT/RENEWABLES PROGRAM
DESIGN MANUAL**

DRAFT

REGIONAL CLIMATE PROTECTION AUTHORITY
490 Mendocino Avenue, Suite 206
Santa Rosa, CA 95401

Version 1
March 1, 2010

FINANCING ARRA

APPENDIX A—WAP UNDERTAKINGS EXEMPT FROM SECTION 106 REVIEW

All undertakings will be done in accordance with applicable local building codes or the International Building Code, where applicable. In accordance with 36 CFR 800.3(a)(1), the following undertakings have been determined to have no potential to cause effects on historic properties:

A. Exterior Work

- 1) Air sealing of the building shell, including caulking, weather-stripping, and other air infiltration control measures on windows and doors, and installing thresholds in a manner that does not harm or obscure historic windows or trim.
- 2) Thermal insulation, such as non-toxic fiberglass and foil wrapped, in walls, floors, ceilings, attics, and foundations in a manner that does not harm or damage historic fabric.
- 3) Blown in wall insulation where no holes are drilled through exterior siding, or where holes have no permanent visible alteration to the structure
- 4) Removable film on windows (if the film is transparent), solar screens, or window louvers, in a manner that does not harm or obscure historic windows or trim.
- 5) Reflective roof coating in a manner that closely resembles the historic materials and form, or with materials that restore the original feature based on historic evidence, and in a manner that does not alter the roofline, or where not on a primary roof elevation or visible from the public right-of-way.
- 6) Storm windows or doors, and wood screen doors in a manner that does not harm or obscure historic windows or trim.
- 7) In-kind replacement or repair of primary windows, doors and door frames that closely resemble existing substrate and framing

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REVIEW

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CASE STUDY

SANTA CRUZ – SOLAR RIGHTS ACT



CONCLUSIONS REACHED WORKING WITH LOS ANGELES:

1. CHBC NOT VERY USEFUL IN A VOLUNTARY COMPLIANCE SITUATION.
2. CEQA REVIEW MAY BE A POSSIBILITY.
3. SECTION 106 REVIEW IS REQUIRED IF FEDERAL MONEY IS BEING USED
4. SECTION 714 OF THE SOLAR RIGHTS ACT
(<http://codes.lp.findlaw.com/cacode/CIV/5/d2/1/2/2/2/s714>):
APPEARS TO REQUIRE REGULAR HISTORIC COMMISSION REVIEW IN CONTRADICTION
TO OTHER PARTS OF THE ACT WHICH REQUIRES MINISTERIAL REVIEW.

CASE STUDY NAPA



Off-Site Energy Options



12:00 PM

Falls

aha

Chicago

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Syracuse

St. Louis

Indianapolis

Las Vegas

NO REVIEW STAFF



Raleigh

Huntsville

Jackson

Savannah

Mobile

STORM WALL



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Local Governments

Build It Green offers strategic assistance to local governments for developing, promoting, and implementing their green building policies and programs. Services provided by Build It Green include:

- Establishing and supporting [Public Agency Councils](#) in priority regions around the state
- Helping local governments reach the next level in their climate action goals through the [Roadmap for Local Governments](#)
- Conducting training for local government officials, policy makers, and staff
- Benchmarking and [tracking local government policies](#), programs, and incentives to tap into emerging best practices and avoid "reinventing the wheel".

As awareness increases among state and local government agencies about the economic, health, environmental and social benefits of



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www.ohp.parks.ca.gov

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- Workshops
- CEQA
- CHRIS IC
- Sustainability**
- THP
- Landmarks
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Office of Historic Preservation



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OFFICE OF HISTORIC PRESERVATION

Welcome to OHP

STATE OFFICE FURLONGHS CLOSE OHP 1st & 3rd FRIDAYS

Until further notice, the Office of Historic Preservation will be closed on the **first and third Friday** of each month beginning Friday, February 6, to comply with the Governor's furlough order. No one will be in the office on the first and third Fridays to answer phones or e-mails.

MISSION

The mission of the **Office of Historic Preservation (OHP)** and the **State Historical Resources Commission (SHRC)**, in partnership with the people of California and governmental agencies, is to preserve and enhance California's irreplaceable historic heritage as a matter of public interest so that its vital legacy of cultural, educational, recreational, aesthetic, economic, social, and environmental benefits will be maintained and enriched.



- State Parks
- OHP Home
- Workshops
- CEQA
- CHRIS/IC
- Sustainability
- THPO
- Landmarks
- Newsletter



- CALIFORNIA SOLAR RIGHTS ACT
- GREEN PRESERVATION IN THE NEWS
- LEGISLATION, POLICIES, ORDINANCES
- LIFE CYCLE COST ACCOUNTING
- PRESERVATION CASE STUDIES
- SUSTAINABILITY INFORMATION RESOURCES
- WINDOW REPAIR & RETROFIT: STUDIES &

SUSTAINABILITY

SUSTAINABILITY

The accepted definition of sustainability from the U.N. World Commission on Environment and Development's 1987 report, "Our Common Future" is that sustainability involves "meeting the needs of the present without compromising the ability of future generations to meet their own needs." The intersection of sustainable design and historic preservation would seem a natural alliance.

Older and historic buildings comprise more than half of the existing buildings in the United States. Retention and adaptive reuse of these buildings preserves the materials, embodied energy, and human capital already expended in their construction. The recycling of buildings is one of the most beneficial "green" practices, and stresses the importance and value of historic preservation in the overall promotion of sustainability.

OHP promotes energy and resource conservation in historic buildings and believes this can be accomplished responsibly without compromising the qualities that define their intrinsic historic

