

APPROPRIATE GREEN STRATEGIES FOR HISTORIC BUILDINGS

Nevada City City Hall

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California Office of Historic Preservation

Nevada City CA

June 2, 2010



IN THIS PRESENTATION:

- **HISTORIC BUILDING CONTRIBUTION**
- **PAST IS PROLOGUE**
- **GREEN STRATEGIES FOR HISTORIC BUILDINGS**
- **DIAGNOSIS AND RETROFIT**
- **3RD PARTY CERTIFICATION AS PRESERVATION TOOL**
- **FINANCING**
- **CASE STUDIES**

HISTORIC BUILDING CONTRIBUTION

National Historic Building Inventory

AREA: Non-Residential Buildings



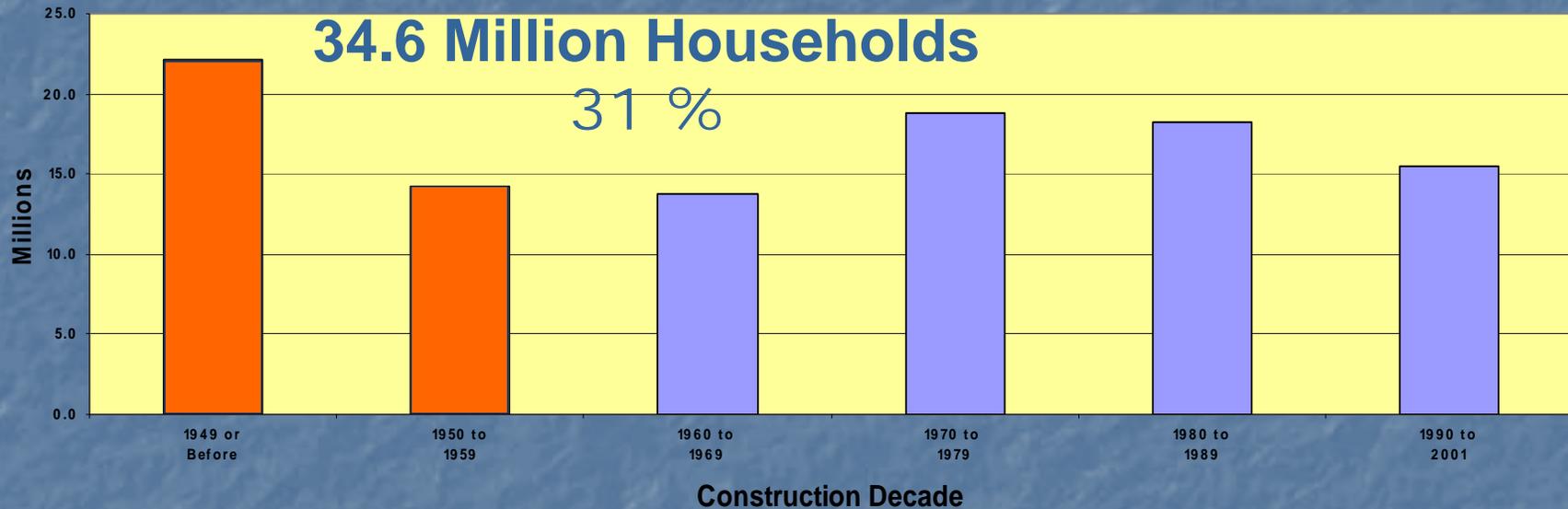
California 21%

Commercial Building Inventory
Department of Energy

HISTORIC BUILDING CONTRIBUTION

National Historic Building Inventory

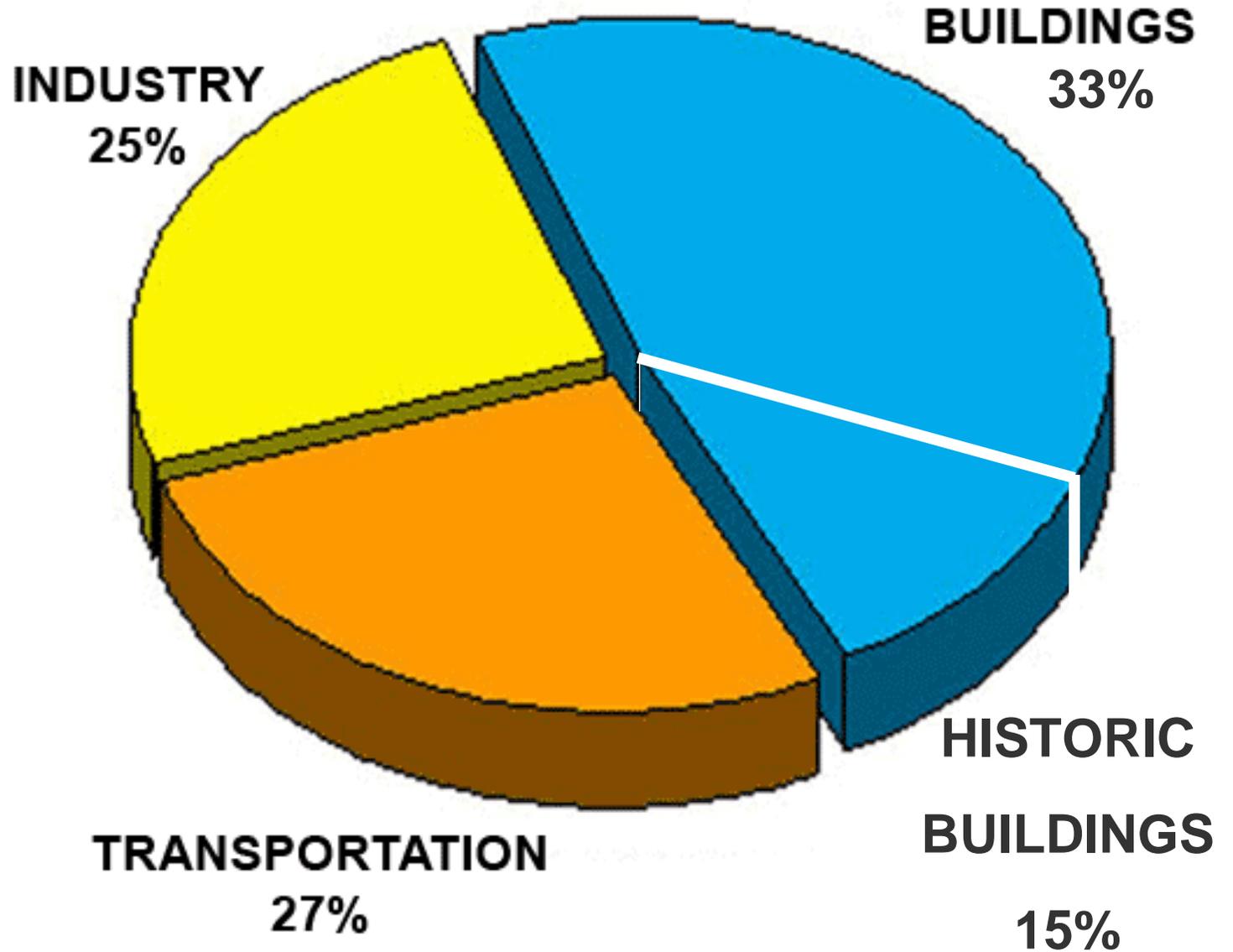
AREA: Residential Buildings



California 24%

Residential Building Inventory
Department of Energy

HISTORIC BUILDING CONTRIBUTION

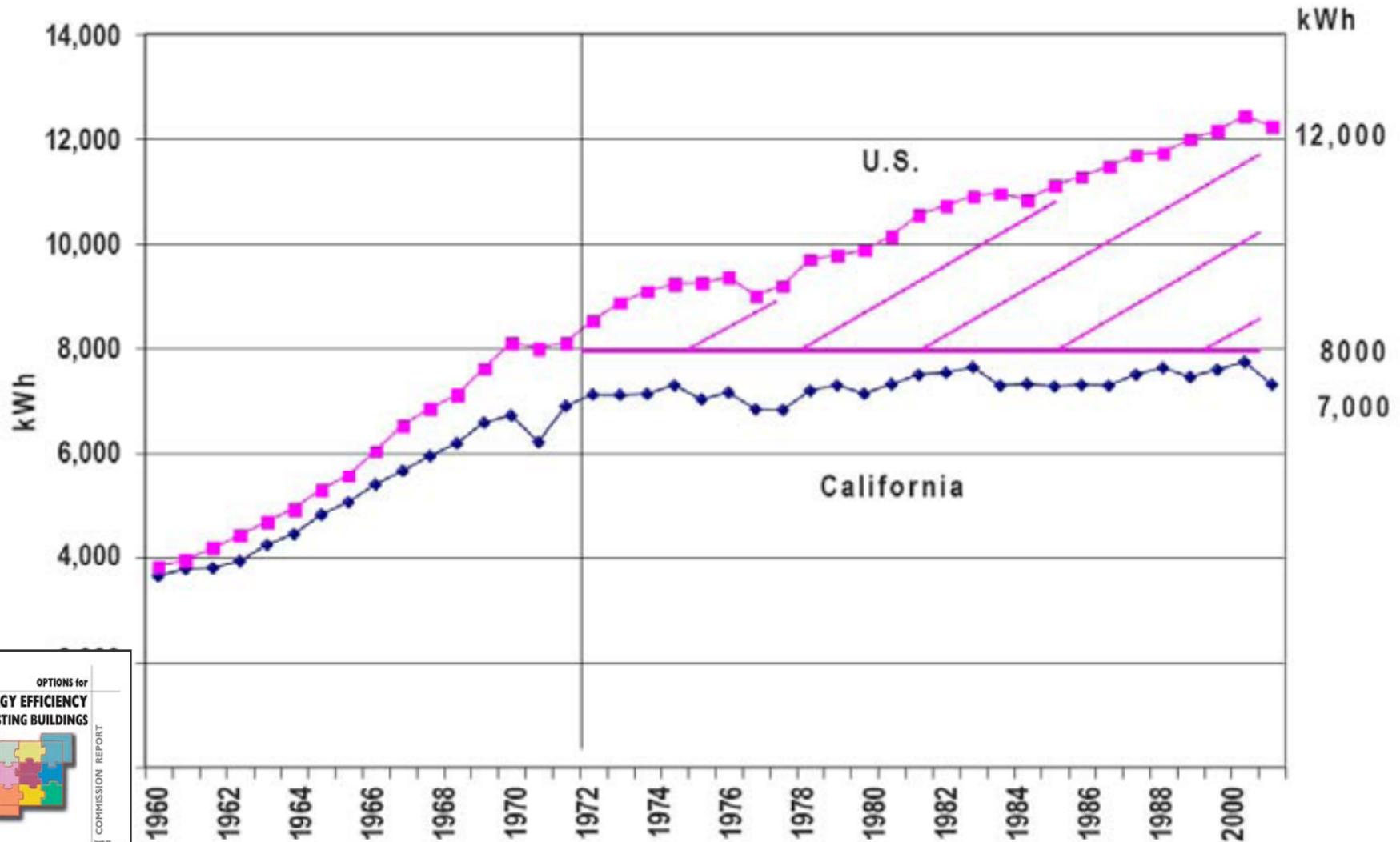


US ENERGY CONSUMPTION

PAST CALIFORNIA ENERGY EFFICIENCY POLICIES

Figure ES-2

Total Electricity Use, per capita, 1960 - 2001



OPTIONS for
ENERGY EFFICIENCY
in EXISTING BUILDINGS



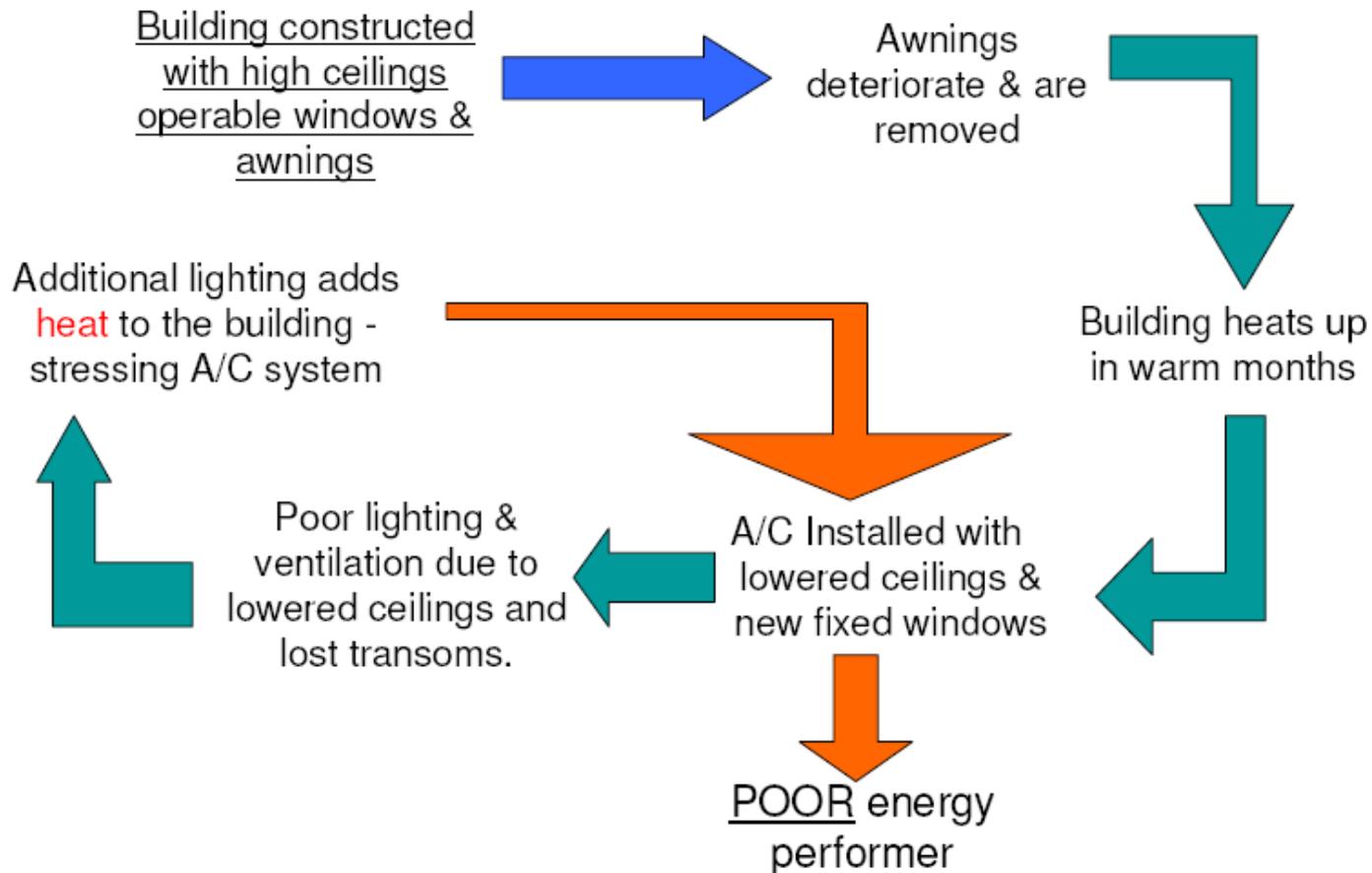
COMMISSION REPORT



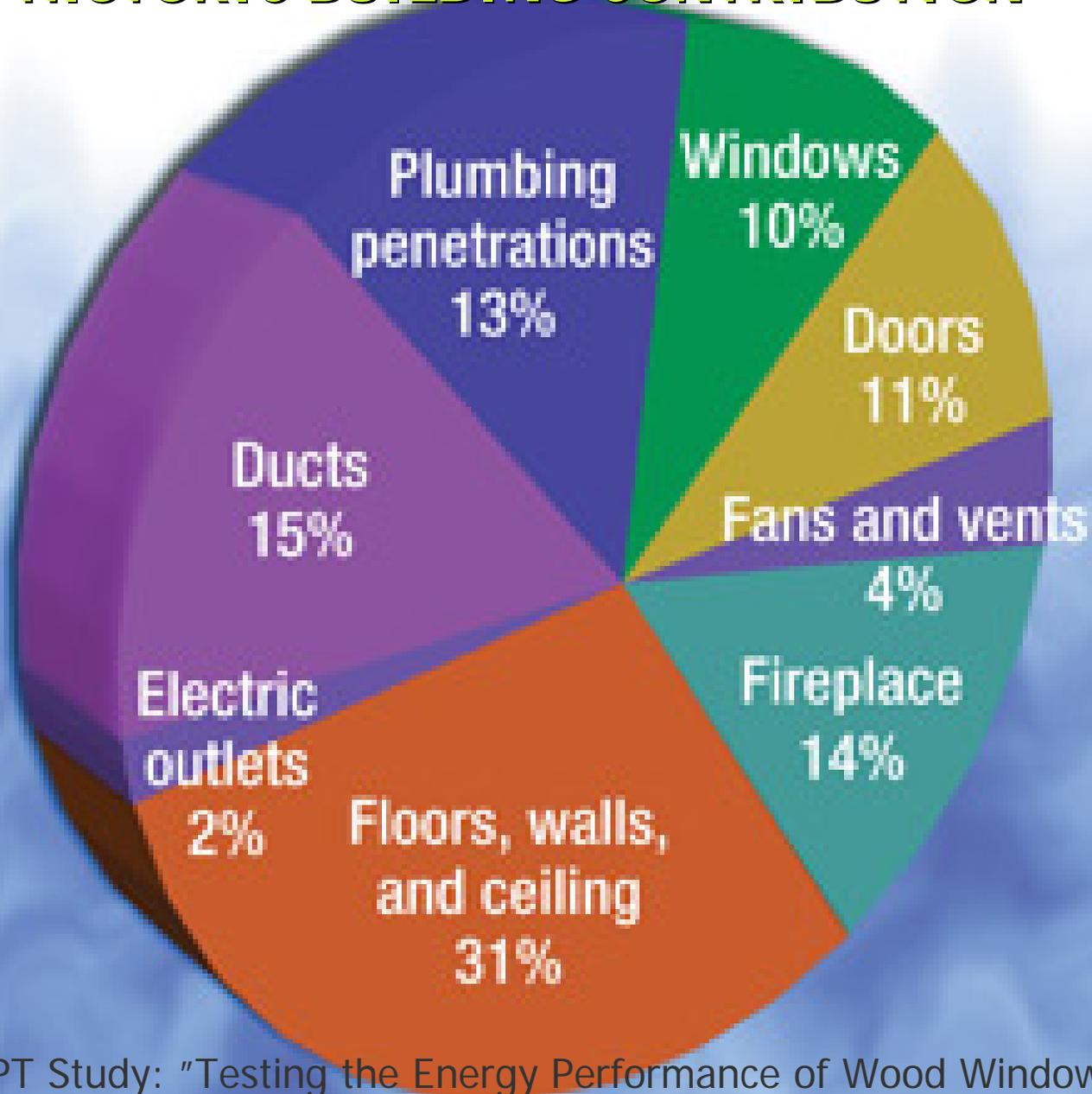
HISTORIC BUILDING CONTRIBUTION

Historic Energy & Atmosphere

Minimum Energy Performance:



HISTORIC BUILDING CONTRIBUTION



1996 NCPPT Study: "Testing the Energy Performance of Wood Windows in Cold Climates", Brad James & Andrew Shapiro, authors. On OHP web site.

PAST IS PROLOGUE



Buildings with zero lot lines, shared party walls and multiple stories have far less exposed perimeter than buildings in more suburban locations.

PAST IS PROLOGUE

www.walkscore.com

Walkscore is a planning & marketing tool that provides a rating for pedestrian access to goods and services.

Nevada City CA

Walk Score: 92 out of 100 – Walkers' Paradise 

Worst  Best 

Something missing?

[Expand all](#)

Transit

No transit data. [Why?](#)

Grocery Stores

Express Mart 0.17 mi

Restaurants

Stonehouse Restaura 0.02 mi

Coffee Shops

Cafe Mekka 0.15 mi

Bars

Dos Banditos 0.03 mi

Movie Theaters

Deer Creek Inn 0.08 mi

Schools

Forest Charter Scho 0.18 mi

Parks

Nevada County Girls 0.18 mi

Libraries

Nevada County Histo 0.18 mi

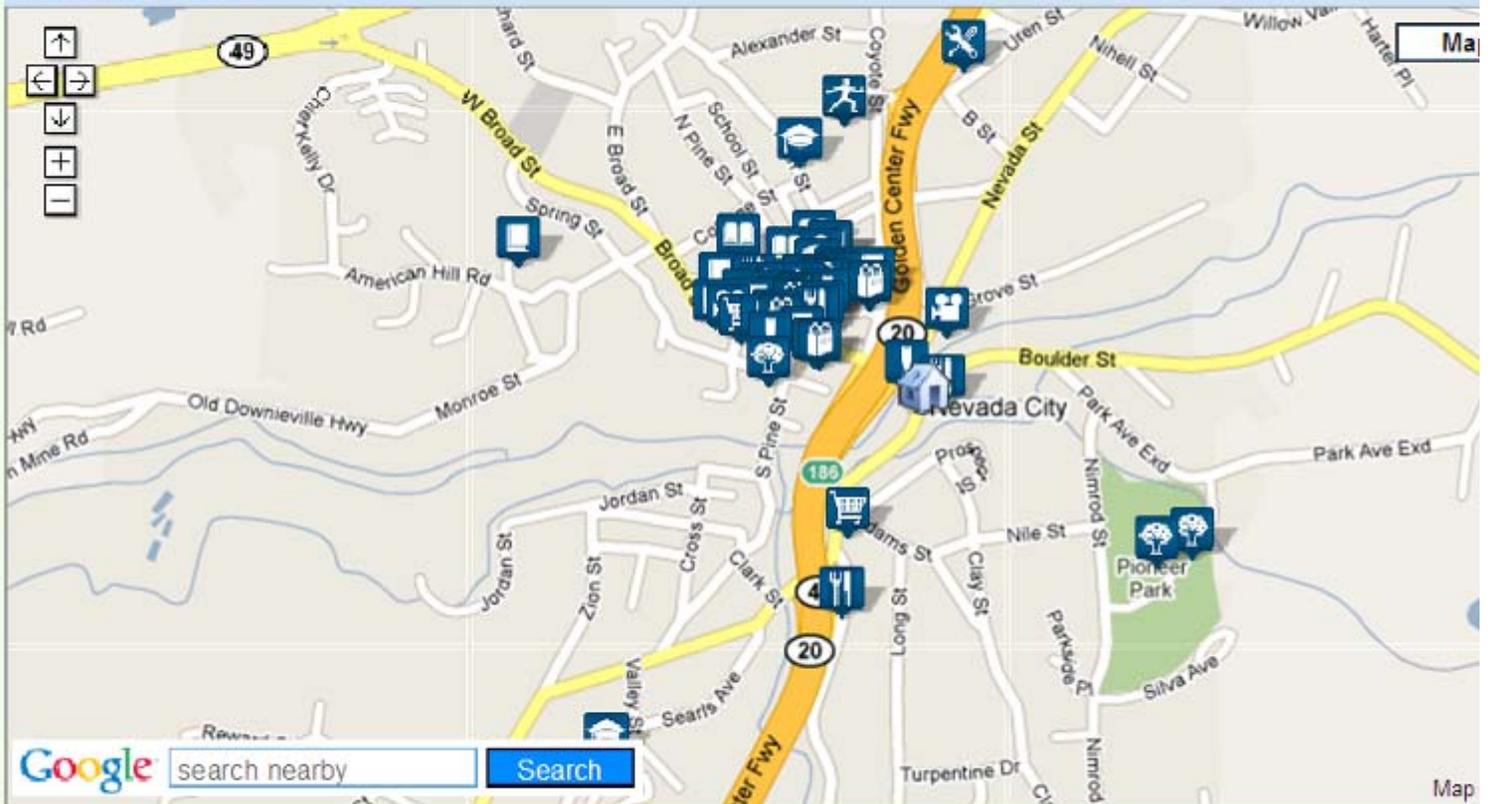
Bookstores

A Main Street Antiq 0.13 mi

Fitness

Shuniaa 0.18 mi

[Share your score](#)



Compare Your Walk Score

Top 10% of scores:  92
Your score:  92
Average score:  49

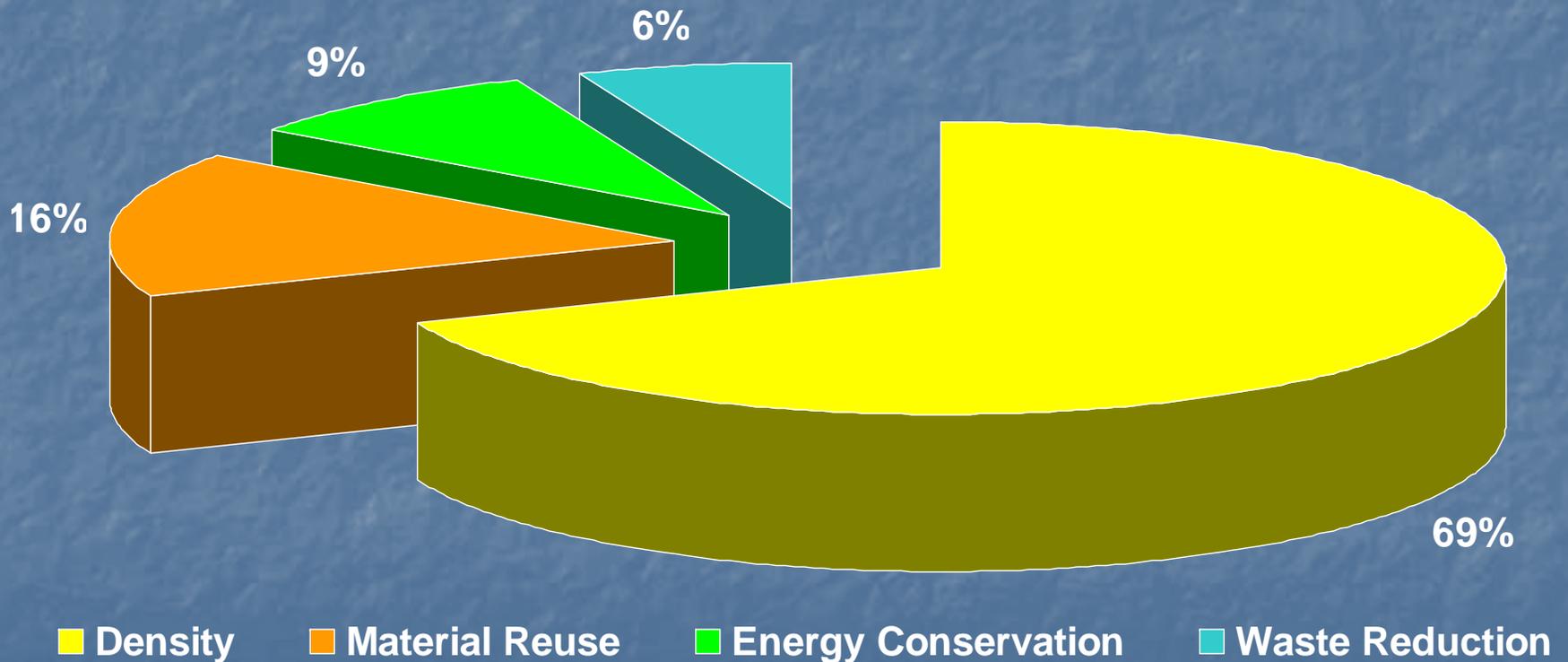
5% of Walk Score users
have a higher Score.

PAST IS PROLOGUE

Green Building Climate Calculator

Preliminary Impact of selected parameters on CO₂ contribution

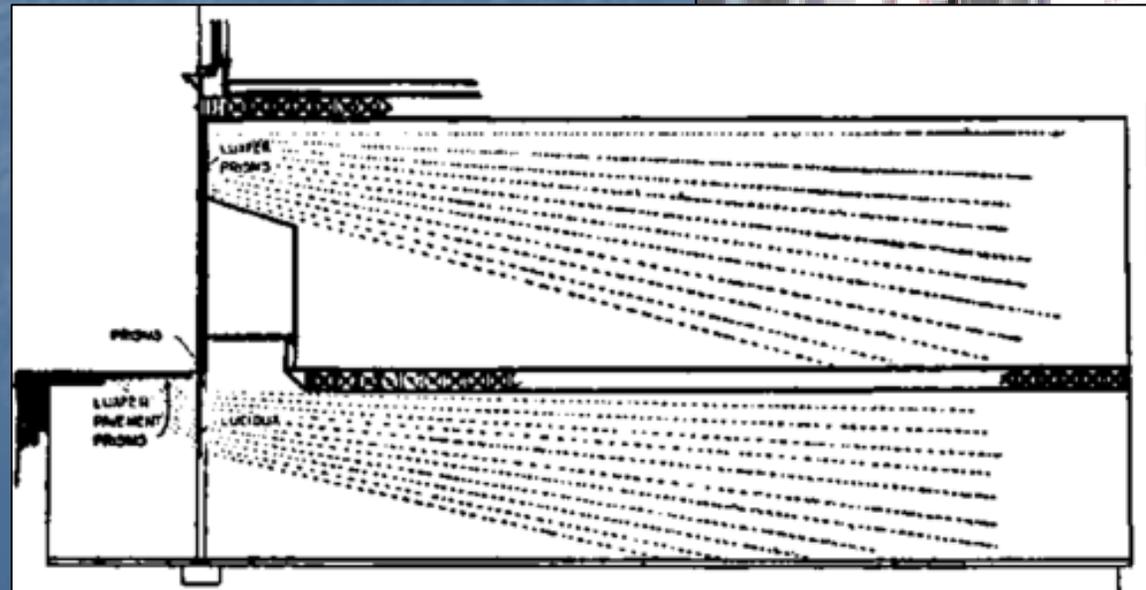
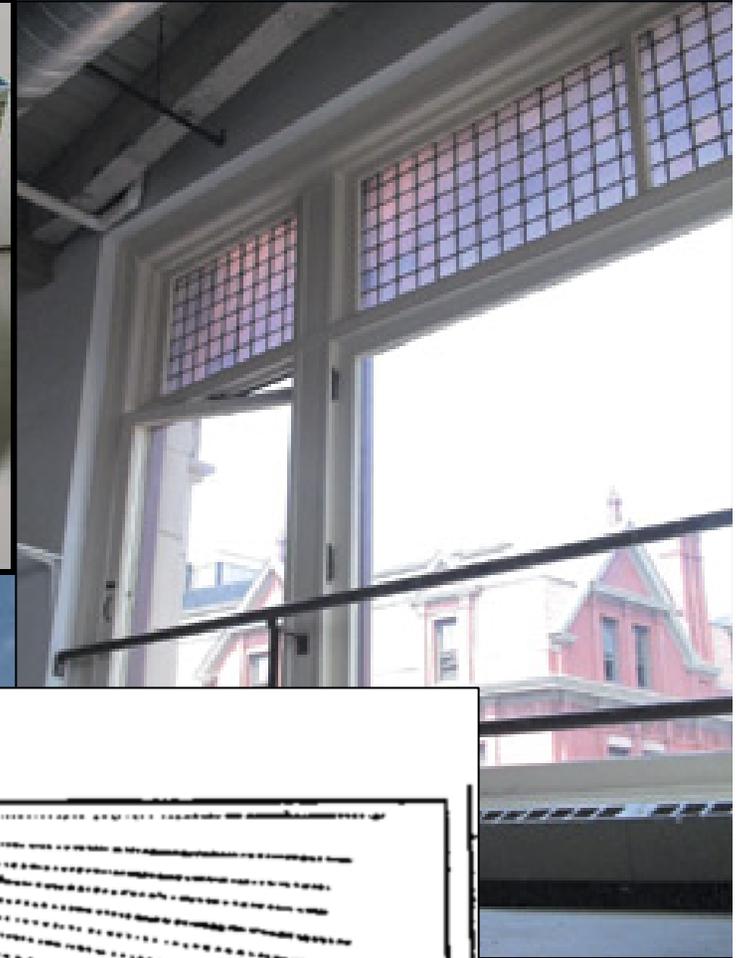
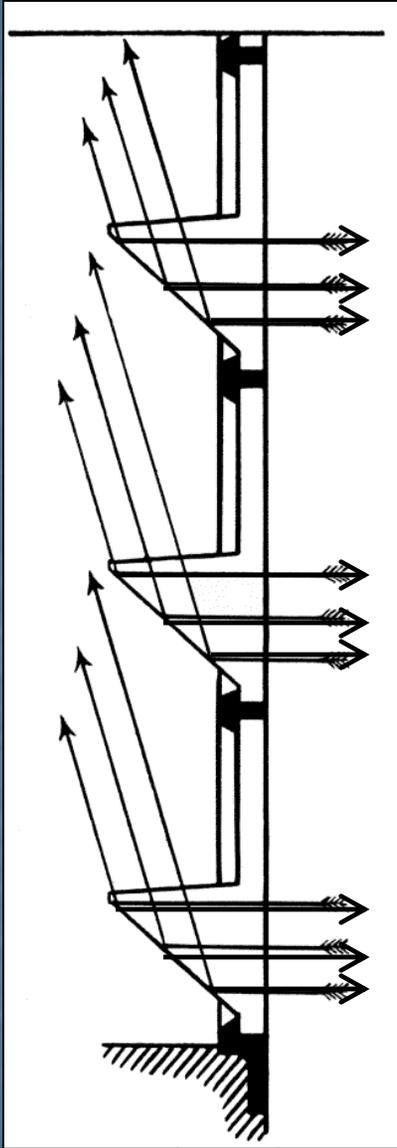
Developed by Build It Green



PAST IS PROLOGUE



PAST IS PROLOGUE



PAST IS PROLOGUE



GREEN STRATEGIES FOR HISTORIC BUILDINGS

Secretary of the Interior's 10 Standards for Rehabilitation

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
8. Significant archeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

GREEN STRATEGIES FOR HISTORIC BUILDINGS

Issues: Landscaping

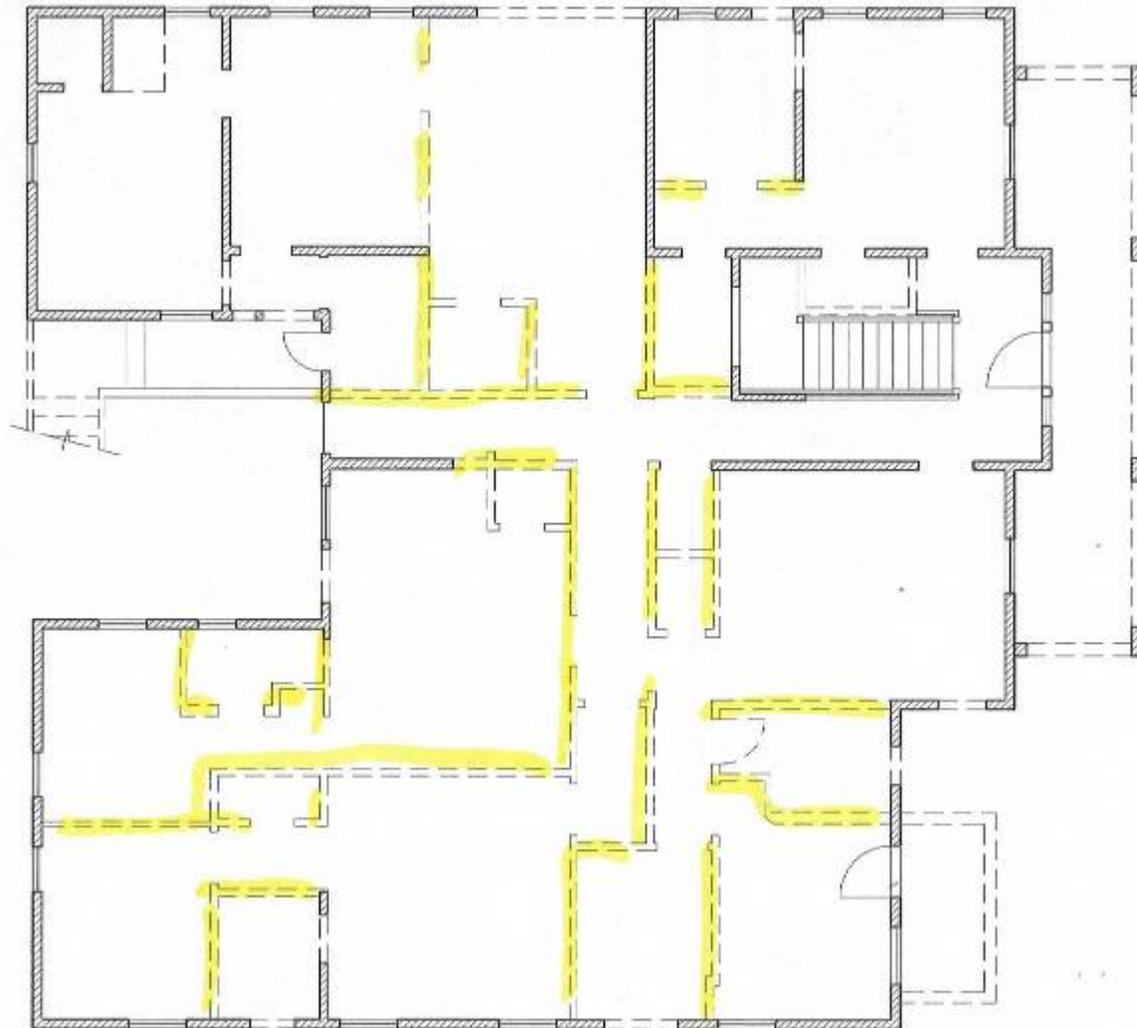
1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of the building and spaces that characterize the property shall be preserved.
3. Each property shall be developed in a manner that does not create a false sense of historical accuracy. Alterations shall not be undertaken.
4. Most properties change over time, but the historic character shall be retained and preserved.
5. Distinctive features, finishes, and materials shall be preserved.
6. Deteriorated historic features, including a distinctive feature, shall be repaired with like materials. Replacement of materials shall be required where repair is not feasible. Replacement requires replacement of materials and, where possible, use of original evidence.
7. Chemical or physical treatments, including cleaning of structures, shall be used only when necessary and shall be reversible. The surface shall be protected from damage.
8. Significant archeological resources shall be identified, and mitigation measures shall be implemented.
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GREEN STRATEGIES FOR HISTORIC BUILDINGS

Secretary of the Interior's 10 Standards for Rehabilitation

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.



GREEN STRATEGIES FOR HISTORIC BUILDINGS

Issues: Removal of original or addition of inappropriate features

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3. Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.
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GREEN STRATEGIES FOR HISTORIC BUILDINGS

Issues: Rehabilitation of original finishes

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GREEN STRATEGIES FOR HISTORIC BUILDINGS 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.

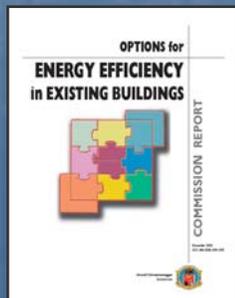
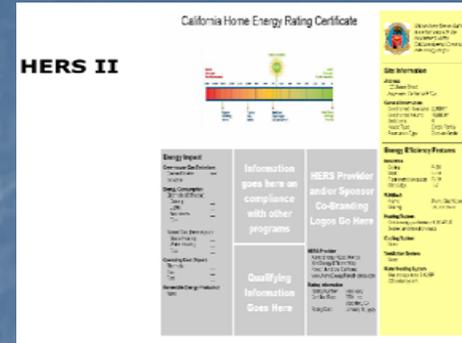
GREEN STRATEGIES FOR HISTORIC BUILDINGS

Off-Site Energy Options



IDENTIFY ENERGY DEFICIENCIES

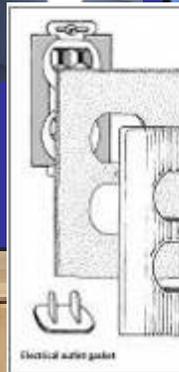
- Time of Sale Information Disclosure by 2010
 - Includes Home Energy Ratings System score
- Information Gateway
 - Utility efficiency information clearinghouses that
 - inform homeowners of energy efficiency actions, programs and services
 - Targets high peak demand and high energy-use homes
 - Facilitates 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



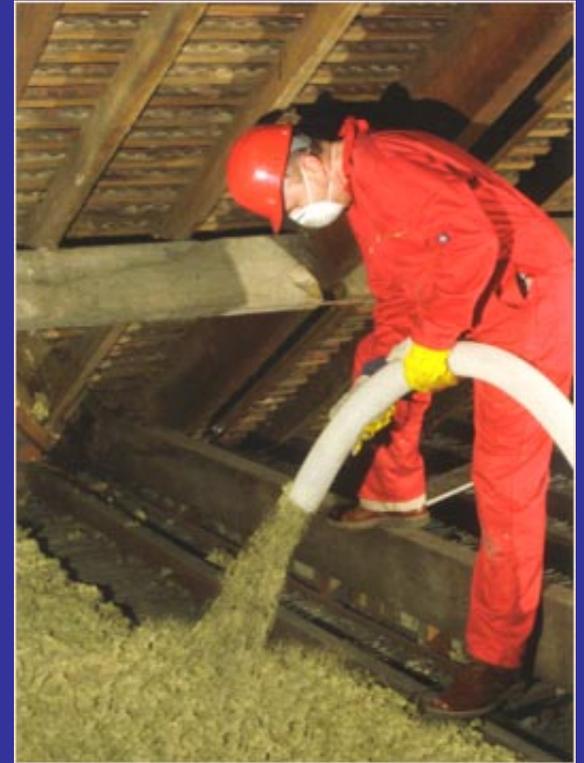
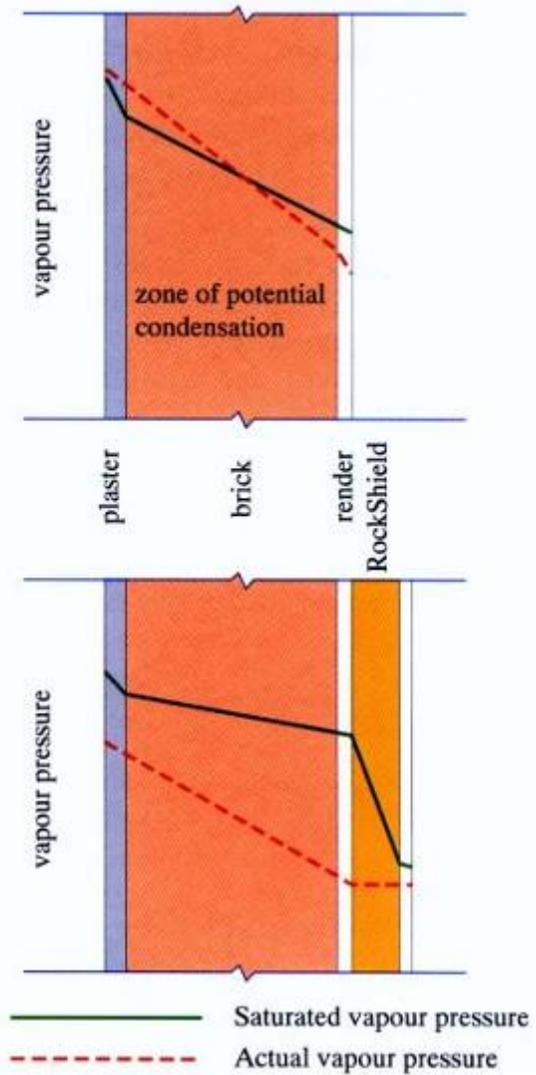
IDENTIFY ENERGY DEFICIENCIES



REPAIR/RESTORE ENERGY FEATURES



Condensation Control



REPAIR/RESTORE ENERGY FEATURES

CUSTOM-FIT VINYL REPLACEMENT **WINDOWS & DOORS**



Buy 10 Windows Special
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Rebate Examples	
5 Windows	\$500.00
10 Windows	\$1,500.00
15 Windows	\$2,000.00

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No Plastering
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Reduces Noise
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HIDEAWAY Screens*

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 - **TEXTURED COATING**
 - **VINYL SIDING**



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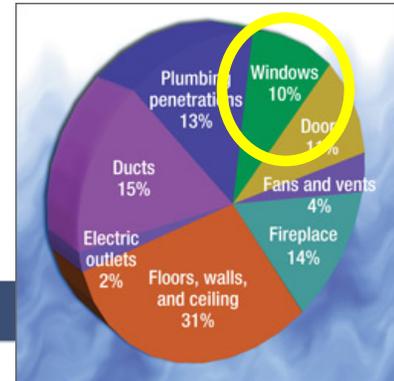
REPAIR/RESTORE ENERGY FEATURES



Office of Historic Preservation
CALIFORNIA STATE PARKS

Skip

- State Parks
- OHP Home
- Workshops
- CEQA
- CHRIS TIC
- Sustainability**
- THPO
- Landmarks
- Newsletter



SUSTAINABILITY

CALIFORNIA SOLAR RIGHTS ACT

WINDOW REPAIR & RETROFIT: STUDIES & RESEARCH

Staff Contact
Mark Huck, AIA
Restoration Architect



THIRD PARTY ENERGY CONSERVATION PROGRAMS

California Building Performance
Contractors Association

cbpca



Building
Performance
Institute

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."

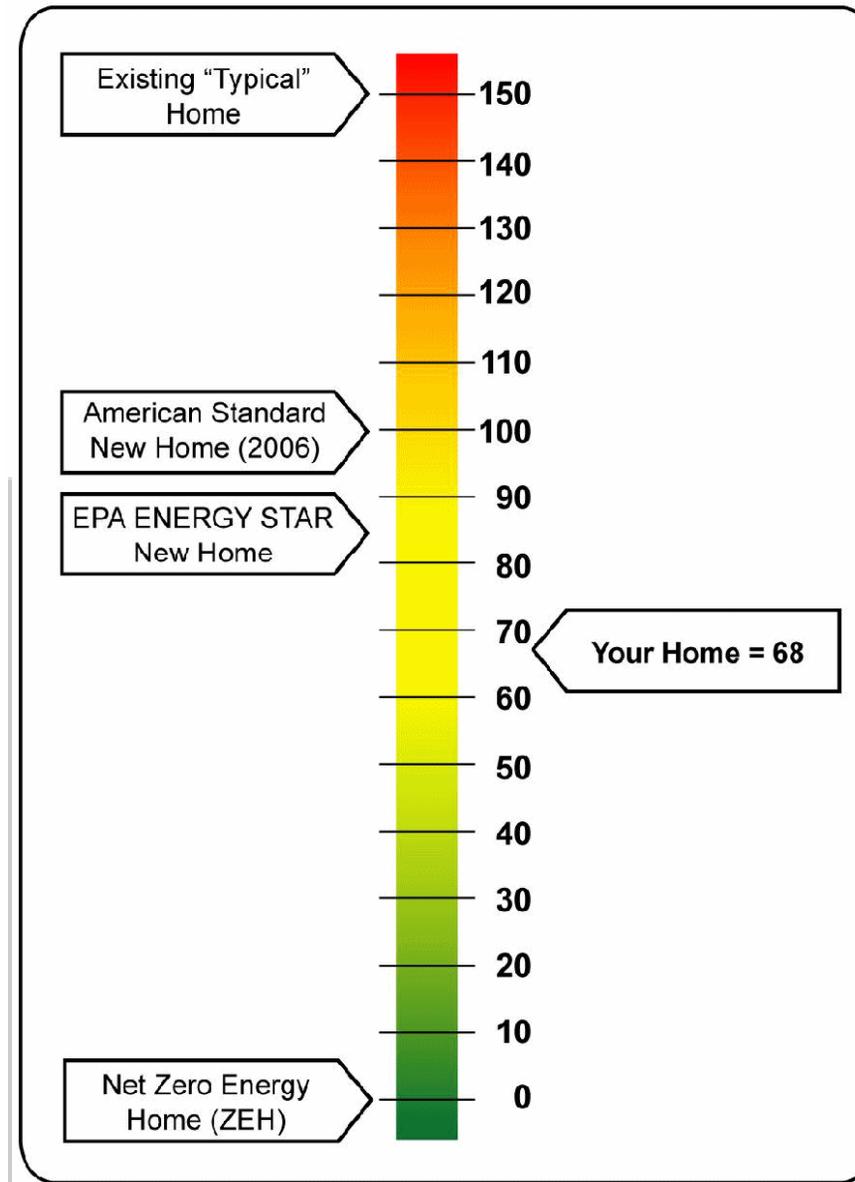
New homeowner Princess Moorman is one of about 50 Marylanders who has qualified for retrofitting for her north Baltimore three-story house. It was built in the 1920s, and although it's been renovated, it's drafty. Moorman says her January heating bill was \$500.

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

HERS Index



California State Energy Rating
 A performance with the
 requirements of the
 California Energy Commission
www.energy.ca.gov/

Site Information

Address
 122 Jones Street
 Anywhere, California 94123

General Information

Conditioned Floor Area: 2,000 SF
 Conditioned Volume: 10,000 CF
 Bedrooms: 4
 House Type: Single Family
 Foundation Type: Sub-slab-Grade

Energy Efficiency Features

Insulation

Ceiling: R-38
 Wall: R-19
 Floor over crawlspace: R-19
 Slab Edge: 16"

Windows

Frame: 2 1/2" Glaz Wood
 Glazing: Double-pane

Heating System

Condensing gas furnace: 0.98 AFUE
 Sealed air distribution ducts

Cooling System

None

Ventilation System

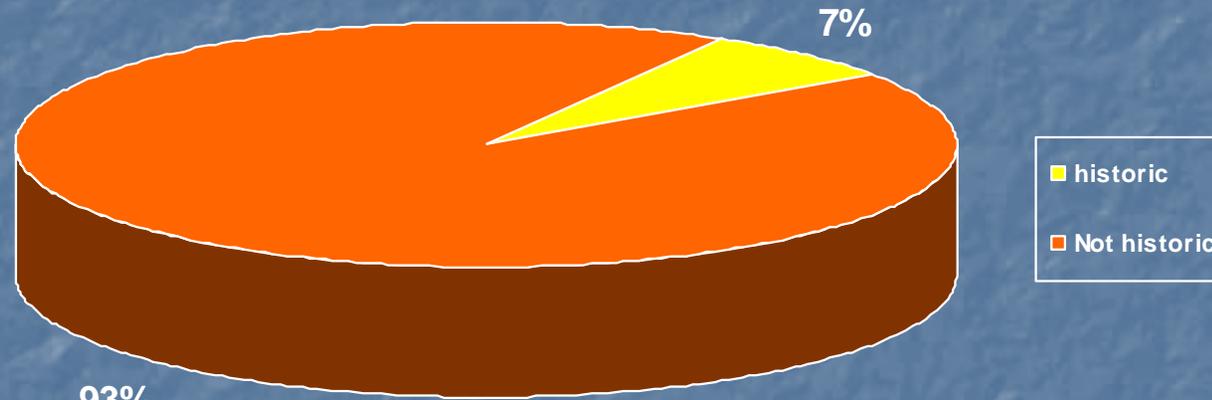
None

Water Heating System

Gas storage hot water: 0.62 EF
 125 gallon system

THIRD PARTY ENERGY CONSERVATION PROGRAMS

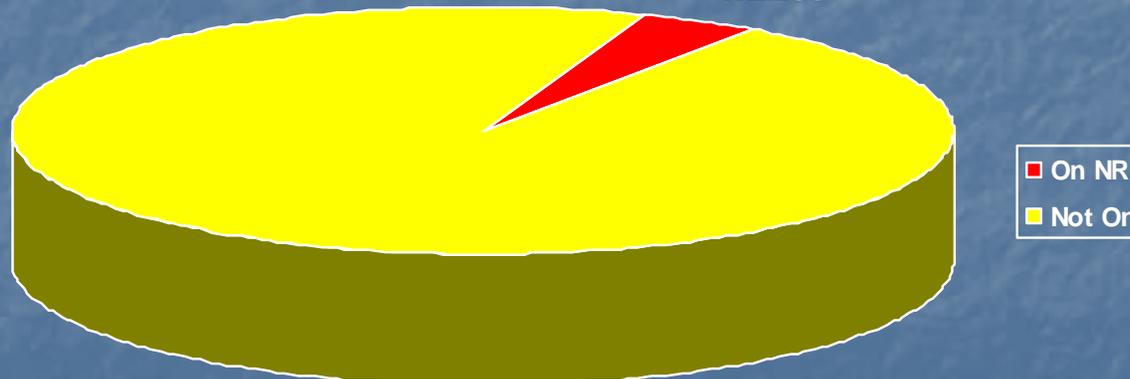
2008 LEED Historic Projects Nationally



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 VOLUNTARY REPAIR GUIDELINES

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

DOWNLOAD FROM EPA AT:

http://www.epa.gov/brownfields/sustain_plts/reports/green_home_guide_final.pdf



FINANCING AB 811

[LEARN](#)[CONTRACTORS](#)[CONTACT](#)[FORMS](#)[FAQS](#)[APPLY](#)[LOG IN](#)

Welcome to mPOWER Placer – A financing program for Placer County property owners to install energy and water efficiency improvements.

These improvements can lower your energy costs, improve your property value and enhance the environment.

If you thought making your home or business more energy and water efficient was too expensive, think again-apply to mPOWER today.



mPOWERPLACER
SAVE MONEY. CONSERVE ENERGY. CREATE JOBS.

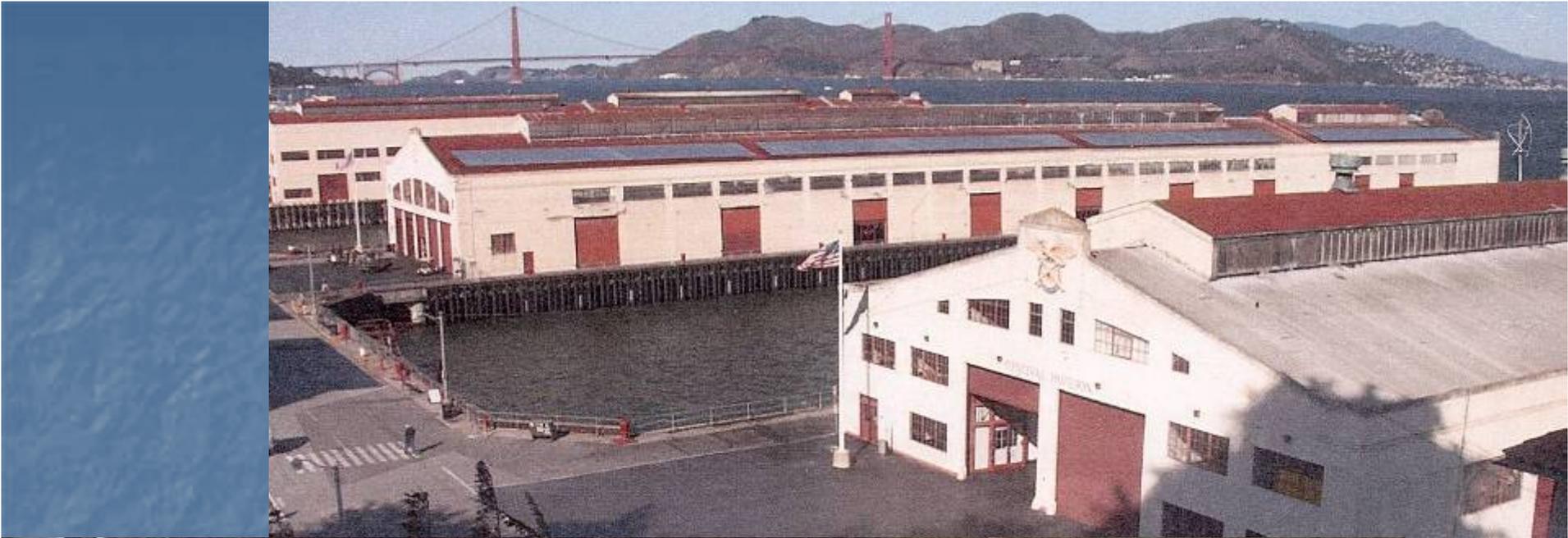
CASE STUDY WHITE ROOF



CASE STUDY SOLAR WATER HEATING



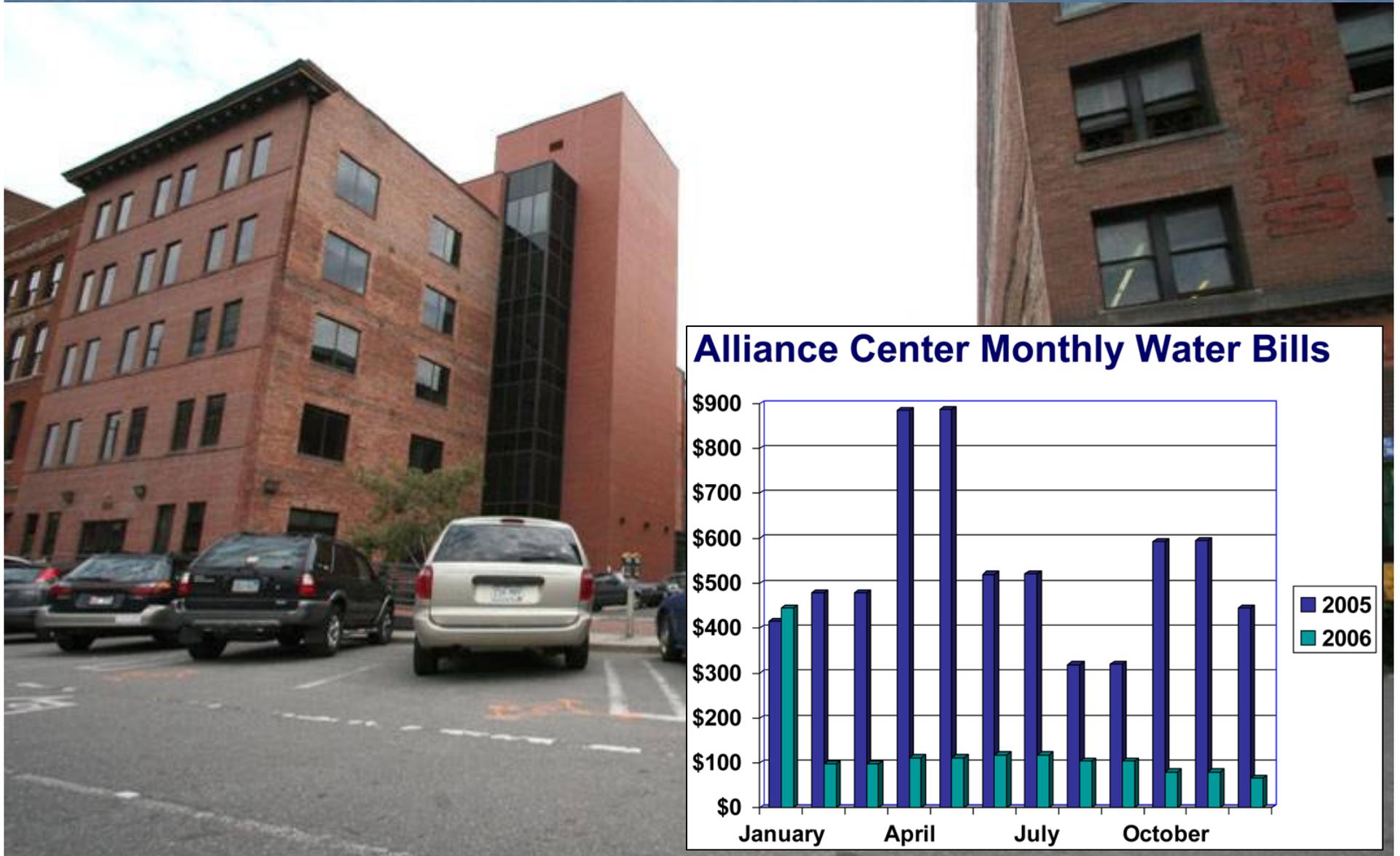
World's largest Laundromat uses solar hot water heating



CASE STUDY

ALLIANCE FOR SUSTAINABLECOLORADO, DENVER CO

WATER CONSERVATION



CASE STUDY

DENHART BANK, WASHINGTON IL

SMALL FOOTPRINT GEOTHERMAL







- State Parks
- OHP Home
- Workshops
- CEQ
- CHRIS/C
- Sustainability
- THPD
- 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

