Preservation as part of a Sustainable Strategy

Mark Huck, AIA, LEED AP
California Office of Historic Preservation

Build It Green
Public Agency Councils

San Diego, California
March 3, 2009
NTHP Preservation Week 1980 poster
WHY HISTORIC & EXISTING BUILDINGS ARE IMPORTANT
BUILDINGS ACCOUNT FOR ALMOST HALF OF GREEN-HOUSE GAS EMISSIONS IN THE UNITED STATES
WHY HISTORIC & EXISTING BUILDINGS ARE IMPORTANT

Historic Buildings

AREA: Non-Residential Buildings

Area in Millions SF

10,640 Million SF
16 %

Construction Decade

1919 or Before
1920 to 1945
1946 to 1959
1960 to 1969
1970 to 1979
1980 to 1989
1990 to 1999
2000 to 2003

Commercial Building Inventory
Department of Energy
WHY HISTORIC & EXISTING BUILDINGS ARE IMPORTANT

Historic Buildings

AREA: Residential Buildings

26.6 Million Households

24%

Residential Building Inventory
Department of Energy
WHY HISTORIC & EXISTING BUILDINGS ARE IMPORTANT

Source: Commercial Building Energy Consumption Survey, 2003
http://www.eia.doe.gov/emeu/cbecs

Average energy consumption  Btu/sq. ft
Commercial Buildings (non malls)

<table>
<thead>
<tr>
<th>Period</th>
<th>Btu/sq. ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before 1920</td>
<td>80,127</td>
</tr>
<tr>
<td>1920 – 1945</td>
<td>90,234</td>
</tr>
<tr>
<td>1946 – 1959</td>
<td>80,198</td>
</tr>
<tr>
<td>1960 – 1969</td>
<td>90,976</td>
</tr>
<tr>
<td>1970 – 1979</td>
<td>94,968</td>
</tr>
<tr>
<td>1980 – 1989</td>
<td>100,077</td>
</tr>
<tr>
<td>1990 – 1999</td>
<td>88,834</td>
</tr>
<tr>
<td>2000 – 2003</td>
<td>79,703</td>
</tr>
</tbody>
</table>

PERCEIVED ENERGY INEFFICIENCY
### WHY HISTORIC & EXISTING BUILDINGS ARE IMPORTANT

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

<table>
<thead>
<tr>
<th>Decade Built</th>
<th>kWh</th>
<th>kcf (gas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before 1949</td>
<td>8,332</td>
<td>82</td>
</tr>
<tr>
<td>1950 – 1959</td>
<td>9,533</td>
<td>71</td>
</tr>
<tr>
<td>1960 – 1969</td>
<td>9,586</td>
<td>63</td>
</tr>
<tr>
<td>1970 – 1979</td>
<td>11,971</td>
<td>61</td>
</tr>
<tr>
<td>1980 – 1989</td>
<td>12,534</td>
<td>63</td>
</tr>
<tr>
<td>1990 – 2001</td>
<td>10,656</td>
<td>70</td>
</tr>
</tbody>
</table>

### PERCEIVED ENERGY INEFFICIENCY
RECO – Berkeley
Residential Energy Conservation Ordinance

• Adopted in 1985 with the intent of increasing the energy and water efficiency in existing Berkeley residences. This long-standing goal contributes to the Berkeley Climate Action goal of reducing Berkeley's overall greenhouse gas emissions by 80% by the year 2050.

• **When does RECO apply?** RECO applies to all homes, residential areas of mixed-use buildings, tenants-in-common, condominiums, multi-family properties, live-work spaces and boarding houses.

• **Renovation:** All homes or apartment buildings undergoing renovations with a combined permit value of $50,000 or more *must* demonstrate compliance with RECO requirements.

• **Sale or Transfer of Property:** All homes or apartment buildings, sold or transferred *must* demonstrate compliance with RECO requirements by being inspected and filing "Form A - Certificate of RECO Compliance" with the City of Berkeley.
AB 811 amends Sections 5898.12, 5898.20, 5898.22, and 5898.30 of the Streets and Highways Code, and adds Sections 5898.14 and 5898.21 relating to contractual assessments, allowing local jurisdictions to raise and disburse funds to finance energy equipment and conservation measures.

Loan document that describes the loan for a renewable energy system or energy efficient equipment as an assessment to the property pursuant to Section 5898.30 of the California Streets and Highway Code.
JURISDICTIONS PROMOTE BETTER ENERGY PERFORMANCE

The Presidio

Building 35

Building 1161

Green Building Guidelines
for the Rehabilitation of Historic & Non-Historic Buildings

Thoreau Center for Sustainability
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.
CUSTOM-FIT VINYL REPLACEMENT

WINDOWS & DOORS

Buy 10 Windows Special
SAVE $1,500.00
or GET A FREE ENTRY DOOR
(Up to a $1,500.00 Value)

$100 Factory Rebate for Each New Window

Rebate Examples

5 Windows $500.00
10 Windows $1,500.00
15 Windows $2,000.00

No Painting
No Plastering
No Stucco Repair
Lowers Utility Bills
Reduces Noise
Maintenance Free

Ask about our Exclusive HIDEAWAY Screens

We Offer the BEST Warranty in the Business. 100% Lifetime Labor and Materials.

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- TEXTURED COATING
- VINYL SIDING

100% Financing o.a.c.
- Senior and Military Discounts

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800-400-1600
Historic Energy & Atmosphere

*Minimum Energy Performance:*

- Building constructed with high ceilings, operable windows & awnings
- Awnings deteriorate & are removed
  - Additional lighting adds heat to the building - stressing A/C system
  - Building heats up in warm months
- A/C installed with lowered ceilings & new fixed windows
  - Poor lighting & ventilation due to lowered ceilings and lost transoms.
  - POOR energy performer
RESPONSIBLE ENERGY UPGRADES TO HISTORIC BUILDINGS

Step 1: Planning

3 Preservation Briefs

Conserving Energy in Historic Buildings
Baird M. Smith, AIA

Inherent Energy Saving Characteristics

NATIONAL TRUST FOR HISTORIC PRESERVATION

Green Home Tips

The greenest house is the house already built. But that doesn't mean you shouldn't make your old house even more environmentally-friendly. House over the numbers to see 10 tips to green your home while maintaining its historic integrity:

1. Insulate
2. Weatherstrip
3. Replace old windows
4. Reconsider the HVAC system
5. Use water wisely
6. Install an energy audit
7. Reduce, reuse, recycle
8. Select low-flow fixtures
9. Plant shade trees
10. Use native plants

Conservation and Energy Saving Characteristics of Historic Buildings

Historic buildings have energy saving physical features and devices that contribute to their thermal performance. Studies by the Energy Research and Development Administration show that the buildings with the poorest energy efficiency are actually those built between 1940 and 1975. These buildings were found to use less energy for heating and hence require fewer"
RESPONSIBLE ENERGY UPGRADES TO HISTORIC BUILDINGS

Step 2: Quantification
RESPONSIBLE ENERGY UPGRADES TO HISTORIC BUILDINGS

Step 3: Installation
Step 4: Payment

H.R. 1

One Hundred Eleventh Congress
of the
United States of America

HOUSING PROGRAMS

ASSISTED HOUSING STABILITY AND ENERGY AND GREEN RETROFIT INVESTMENTS

For assistance to owners of properties receiving project-based assistance pursuant to section 202 of the Housing Act of 1959 (12 U.S.C. 17012), section 811 of the Cranston-Gonzalez National

Tax Credits for Energy-Efficient Improvements to Existing Homes. The bill would extend the tax credits for improvements to energy-efficient existing homes through 2010. For 2009 and 2010, the bill would increase the amount of the tax credit to thirty percent (30%) of the amount paid or incurred by the taxpayer for qualified energy efficiency improvements during the taxable year. The bill would also eliminate the property-by-property dollar caps on this tax credit and provide an aggregate $1,500 cap on all property qualifying for the credit.
ENERGY ISSUES 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.
ENERGY ISSUES FOR HISTORIC BUILDINGS

Issues: Landscaping

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ENERGY ISSUES FOR HISTORIC BUILDINGS

Issues: Removal of original or addition of inappropriate features

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ENERGY ISSUES FOR HISTORIC BUILDINGS

Issues: Rehabilitation of original finishes

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ENERGY ISSUES FOR HISTORIC BUILDINGS

Other issues?

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Civil Code Section 714:

714. (a) Any covenant, restriction, or condition contained in any deed, contract, security instrument, or other instrument affecting the transfer or sale of, or any interest in, real property that effectively prohibits or restricts the installation or use of a solar energy system is void and unenforceable. (b) This section does not apply to provisions that impose reasonable restrictions on solar energy systems. However, it is the policy of the state to promote and encourage the use of solar energy systems and to remove obstacles thereto. Accordingly, reasonable restrictions on a solar energy system are those restrictions that do not significantly increase the cost of the system or significantly decrease its efficiency or specified performance, or that allow for an alternative system of comparable cost, efficiency, and energy conservation benefits. (e) Whenever approval is required for the installation or use of a solar energy system, the application for approval shall be processed and approved by the appropriate approving entity in the same manner as an application for approval of an architectural modification to the property, and shall not be willfully avoided or delayed.
ENERGY ISSUES FOR HISTORIC BUILDINGS

Off-Site Energy Options

SMUD solar shares

Sustainable Preservation Coalition

Working together on integration of preservation values into the revised version of LEED.
LEED - 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.
The 2009 CLG Grants Manual includes bonus points for incorporating sustainable topics in a proposed project.
TRAINING and WORKSHOPS

www.ohp.parks.ca.gov

PRESENTATIONS FROM PAST WORKSHOPS

2008 CALIFORNIA PRESERVATION FOUNDATION (CPF) CONFERENCE PRESENTATIONS

RIVERSIDE COUNTY Cultural Resources Pro-Seminars & Orientation Classes
Riverside County requires all professional-level archaeologists certifying reports submitted to the County of Riverside to be certified as having attended an orientation/professional topics training session once very two years. Sessions are open to those not seeking certification, space permitting. For more information, contact Julie Urias juriass@rctlma.org or Leslie Mouriquand lmouriqu@rctlma.org or visit Riverside County's Cultural Resource Review website.

March 20, 2009 – Archaic Period Archaeology (Melinda Horne and Donn Grenda)(register by March 6, 2009)
Tell us your experiences with sustainable preservation

www.ohp.parks.ca.gov