



Clatsop
Community
College



ENERGY EFFICIENCY & HISTORIC PRESERVATION





Strengthens Rural People, Places, & Economies in the Pacific Northwest

Develop Networks of
Rural Leaders

Revitalize
Rural Economies

Elevate Rural Voices and
Priorities

Improve
Access to Resources



www.rdiinc.org

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AMERICA**[™]

Coordinating Program

OREGON MAIN STREET



RDI
RURAL DEVELOPMENT INITIATIVES



USDA

Workshop Series Overview

- Economic Vitality 101
- From Numbers to Action
- Business and Property Owner Engagement
- *Key Mindsets for Engagement
- Place Based Economy Building
- Fostering Innovative Communities
- Entrepreneurship
- **Historic Preservation & Energy Efficiency**
- Resiliency



Group Norms

- Take care of your own needs
- Participate fully and respectfully
- Check assumptions and ask questions
- Lead with **curiosity** *in yourself and interactions with others*



Meet the Presenters



Lucien Swerdloff
Clatsop Community College
Historic Preservation & Restoration



John Goodenberger
Clatsop Community College
Historic Preservation & Restoration

Energy Efficiency and Historic Preservation

Main Street Economic Vitality Workshop
Rural Development Initiatives
February 2024

John Goodenberger & Lucien Swerdloff
Clatsop Community College
Historic Preservation Program



Energy Efficiency and Historic Preservation Outline

- CCC Historic Preservation Program
- Sustainable Building
- Building Components
- Case Studies
- Conclusion

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Historic Preservation Program

Clatsop Community College

New Student CHECKLIST

GATHER INFORMATION

- Check out Clatsop Community College to learn about programs and admissions!
- Schedule a visit or ask questions: admissions@clatsopcc.edu, (503) 338-2417
- Visit www.clatsopcc.edu/admissions for more information.

APPLY FOR ADMISSION

- Complete the application online at www.clatsopcc.edu/apply and pay fee:
 - \$15 application fee
- Take the ACCUPLACER for class placement evaluation, or submit transcripts to waive the test.

APPLY FOR FINANCIAL AID & SCHOLARSHIPS

- Complete the Free Application for Federal Student Aid (FAFSA) online: fafsa.ed.gov
 - Clatsop Community College's school code is 001149
- Apply for Scholarships at CCC
- Stop by our Financial Aid office or call (503) 338-2322 for help

AFTER ADMISSION

- Attend an Orientation and Advising Session
- Register for classes
- Arrange payment for tuition
- Go to class!



Historic Preservation & Restoration

CHOOSE YOUR COURSE

Skill Building & Community

Historic Preservation combines practical hands-on skills with history and theory. Students gain skills in traditional crafts, modern building techniques, sustainable building practices, building assessment, documentation and historical research.

As one for more historic buildings per capita than any city in Oregon and provides Clatsop Community College with a unique learning environment, in the Northwest Community projects within the Lower Columbia region are the classroom where students develop preservation skills. Partnerships with regional nonprofit and government organizations provide program support, project sites and student work opportunities. Our instructors are actively involved in local and state historic preservation and include master crafts people working in the field.

Associate & Certificate Programs

Questions?

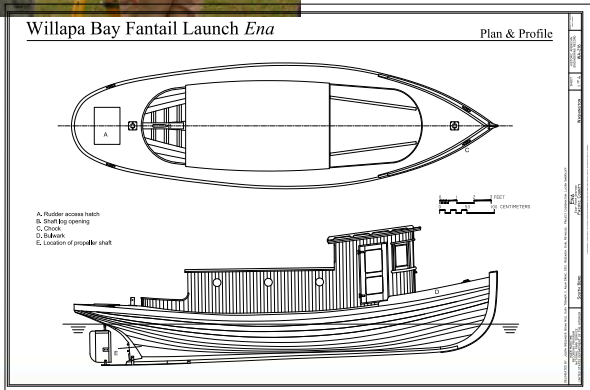
Contact Admissions | CCC Campus
Columbia Hill Room 109 | 1813 Lexington Ave.
admissions@clatsopcc.edu Astoria, Oregon, 97103
503-338-2411
www.clatsopcc.edu

Suggested PLAN OF STUDY

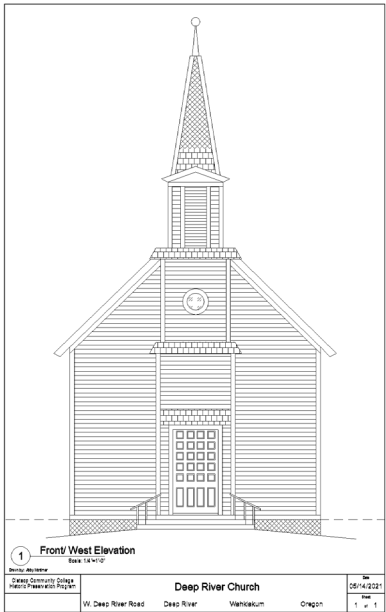
Year One - One Year Certificate	Credits
Fall Term	
REDD 100 Historic Preservation	2
REDD 101 Construction Safety for HP	2
REDD 102 Traditions for HP	2
REDD 103 Planning for Construction	2
REDD 104 Construction Math	2
Workshops	4
Company Field Design I	4
Total	17 Credits
Winter Term	
REDD 105 Residential Materials and Methods I	2
REDD 106 Construction Drawing	2
Workshops	4
Workshops (100 or 60)	4
Total	12 Credits
Spring Term	
HP 101, 102 Historic Buildings	2
REDD 200 Composite Wood Experience	2
REDD 201 CWR Seminar	2
ARCH 110 or 200 Architectural Electric	2
Workshops	4
Total	12 Credits
Total	37 Credits
Year Two	
Fall Term	
REDD 100 Historic Preservation I	2
REDD 200 Glass Building	2
Workshops	4
Electives	4
Total	14 Credits
Winter Term	
REDD 101 Historic Preservation II	2
REDD 201 Project Management	2
Workshops	4
WR 225 Technical Writing	2
Total	12 Credits
Spring Term	
REDD 101 Building Codes I	2
REDD 201 HP & Restoration Project	2
Workshops	4
Electives	4
Total	14 Credits

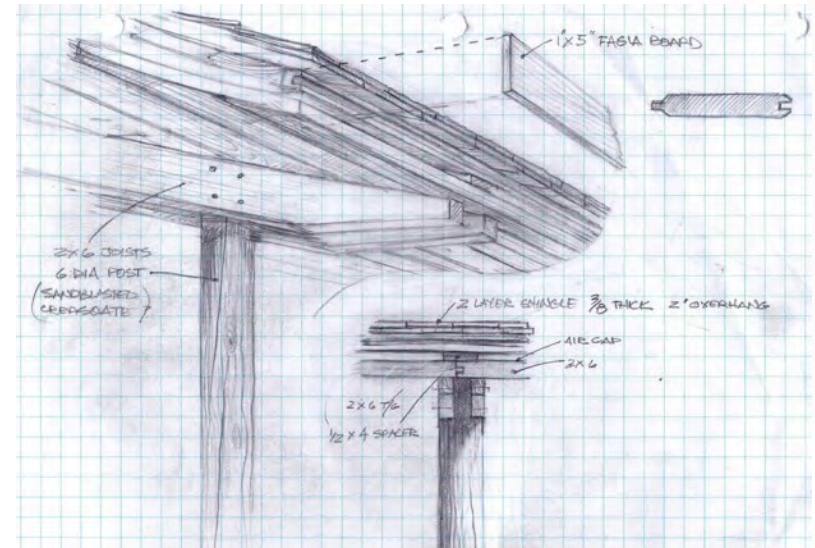
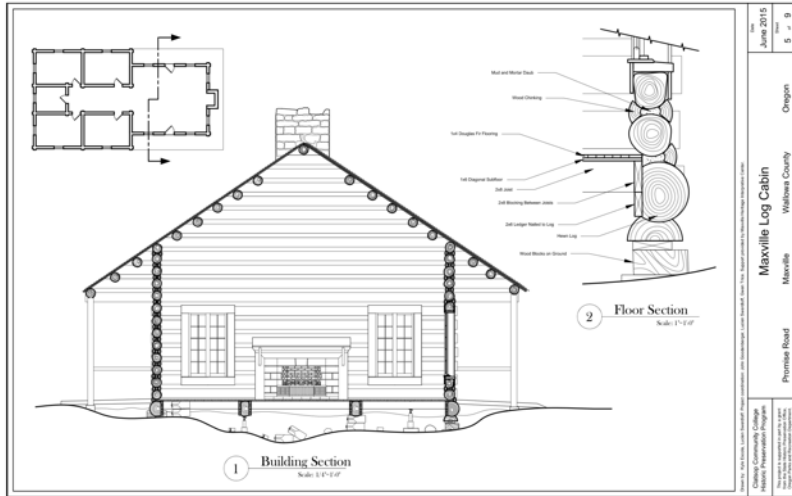
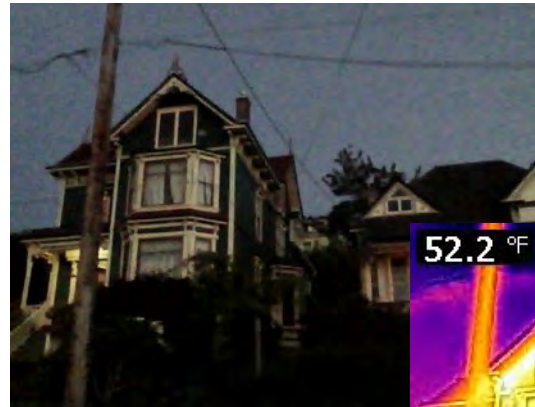
Admission Prerequisite











Energy Efficiency and Historic Preservation

- CCC Historic Preservation Program
- Sustainable Building
- Building Components
- Case Studies
- Conclusion

Green Building

The greenest building is the one that is already built.

Carl Elefante, FAIA, Quinn Evans Architects



Ballard Library

2005

- 15000 sq. ft. Replaced 7300 sq. ft. 1963 building.
- Green roof with 18,000 plants provides insulation and reduces water flow into storm drains.
- Solar panels generate electricity.
- Windows and skylights provide natural daylighting.
- Occupancy sensors control interior lights.
- Recycled carpet, glass and tiles.
- Waterless urinals.
- \$10.6 M.



Ballard Carnegie Library

1904

- Exterior walls: brick walls.
- Interior walls/ceilings: lath and plaster.
- Stone foundation.
- Library, 1904-1963. Antique store. Restaurant, 2003-2010. Pub, offices and wellness center, 2011-present.
- \$15000. (\$1.0 M 2005?)



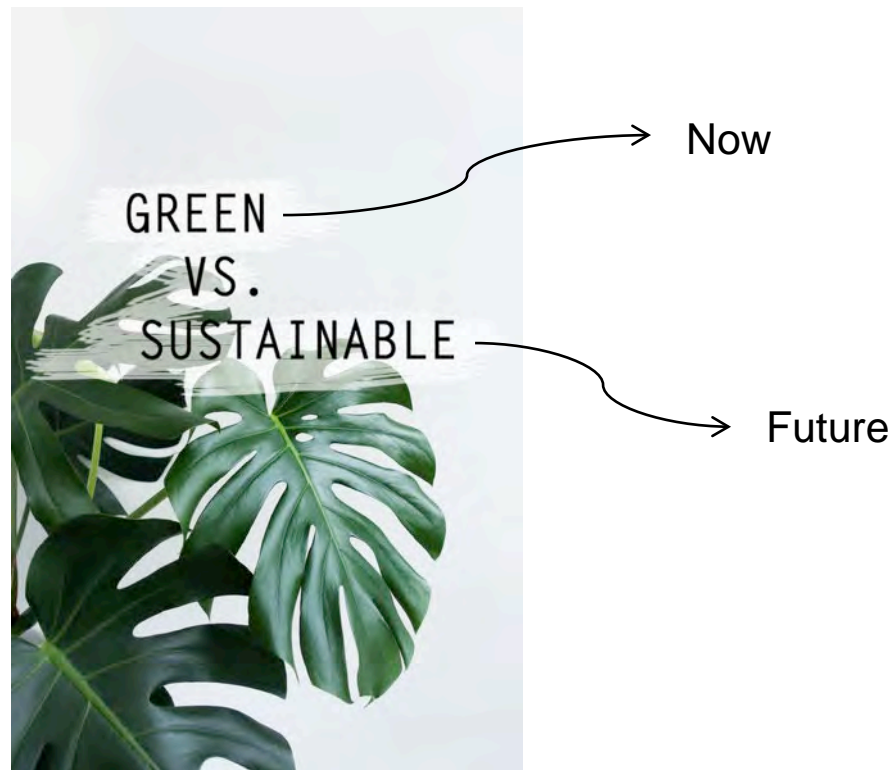
Which is Greener?



It depends what we mean by green.

Green vs. Sustainable

- Green: environmentally friendly.
- Sustainable: meets the needs of the present without compromising the ability of future generations to meet their needs.



Examples

- Bamboo flooring: green (renewable, fast growing) but not necessarily sustainable (shipping, glues)
- Local recycled wood: green and sustainable
- Electric car: green (reduced CO² emissions), sustainable? (coal generated electricity, raw materials)



Sustainability

Historic Buildings are Inherently Sustainable

- Historic structures make up the heart of towns and cities (Society)
- Maintenance of historic buildings relies on local craftsmen (Economy)
- Traditional materials are durable (Environment)



Sustainability

Historic Buildings are Inherently Sustainable

- They were built with energy efficient features
- They can be made more efficient
- They are already here (demolition, new materials, transportation)



Sustainability

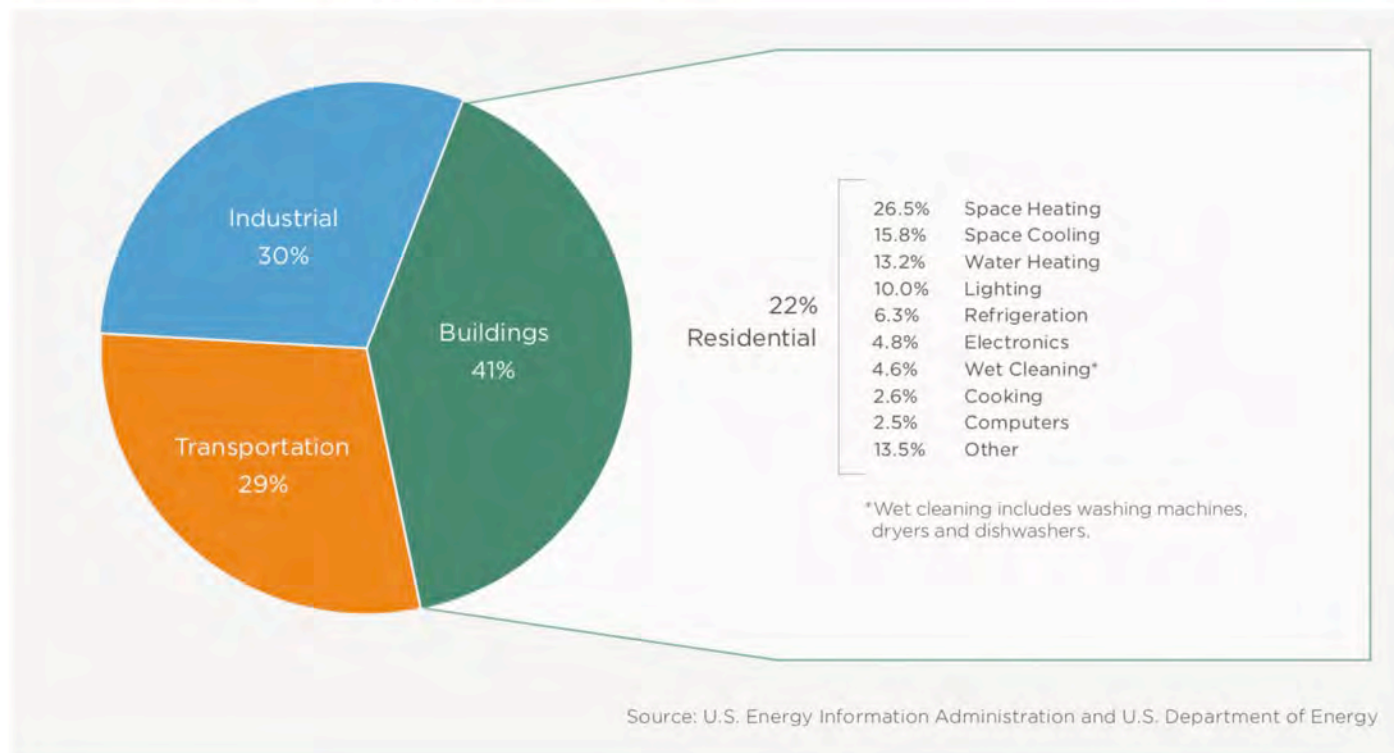
Why Buildings Matter

- Buildings account for 40% of all energy use in the U.S. (more than industry or transportation; U.S. DOA).
- 60% of electricity is generated by burning coal, petroleum or natural gas (U.S. EIA, 2020).
- About 50% of buildings are more than 50 years old.
- Reuse of buildings preserves materials and embodied energy, and reduces demolition debris. (Demolition of 5000 sq. ft. commercial building generates 432 tons of debris; of 2000 sq. ft. house, 183 tons.)

Sustainability

Why Buildings Matter

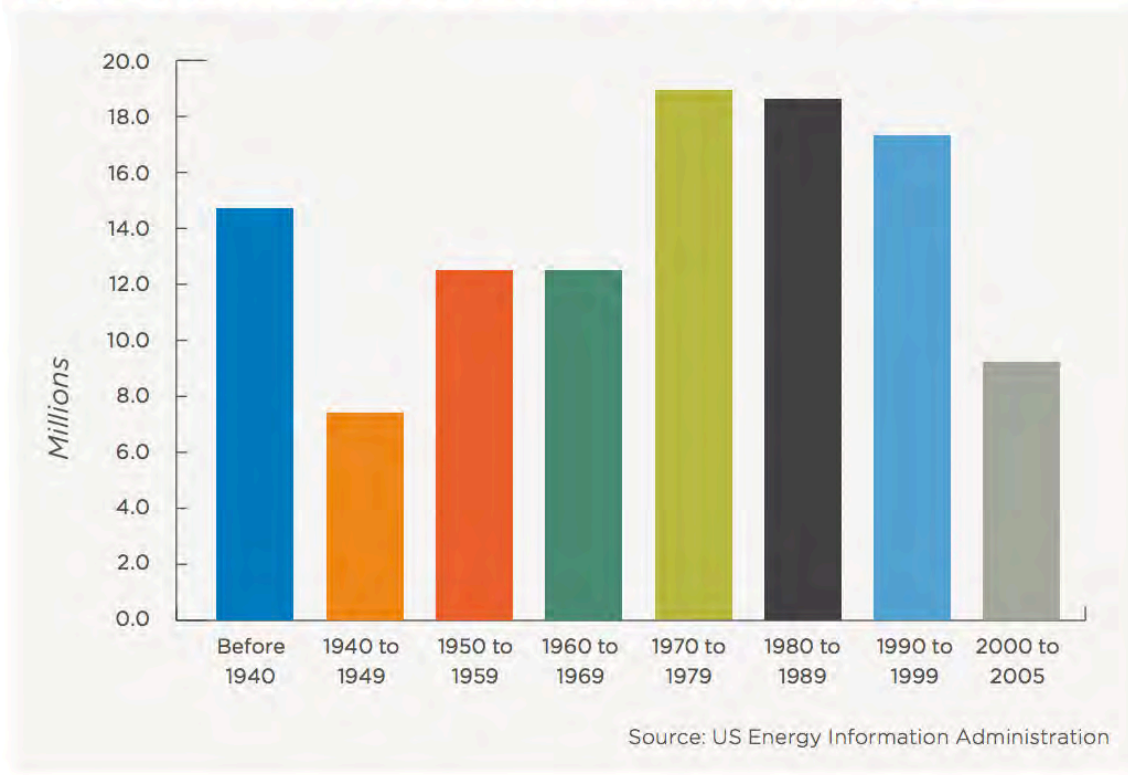
Figure 2: U.S. Energy Consumption by Sector



Sustainability

Why Buildings Matter

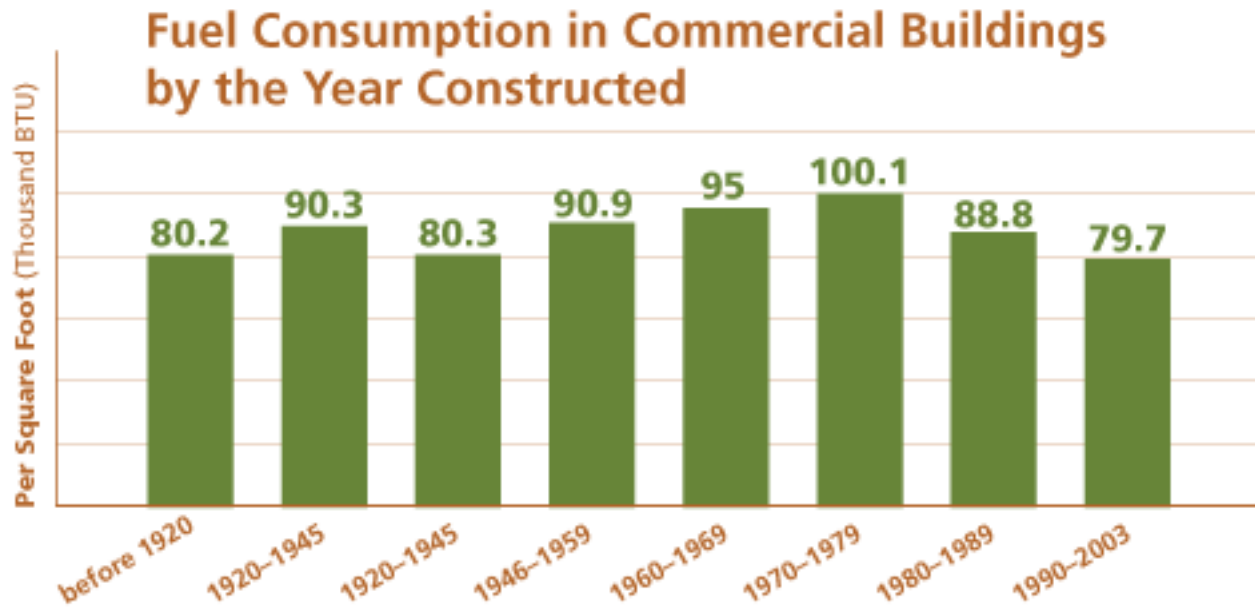
Figure 9: Number of U.S. Residential Units by Vintage



Energy Efficiency

Fuel Consumption

Historic buildings included energy-conserving features in their original designs. These features may have been altered over time, but often still exist.

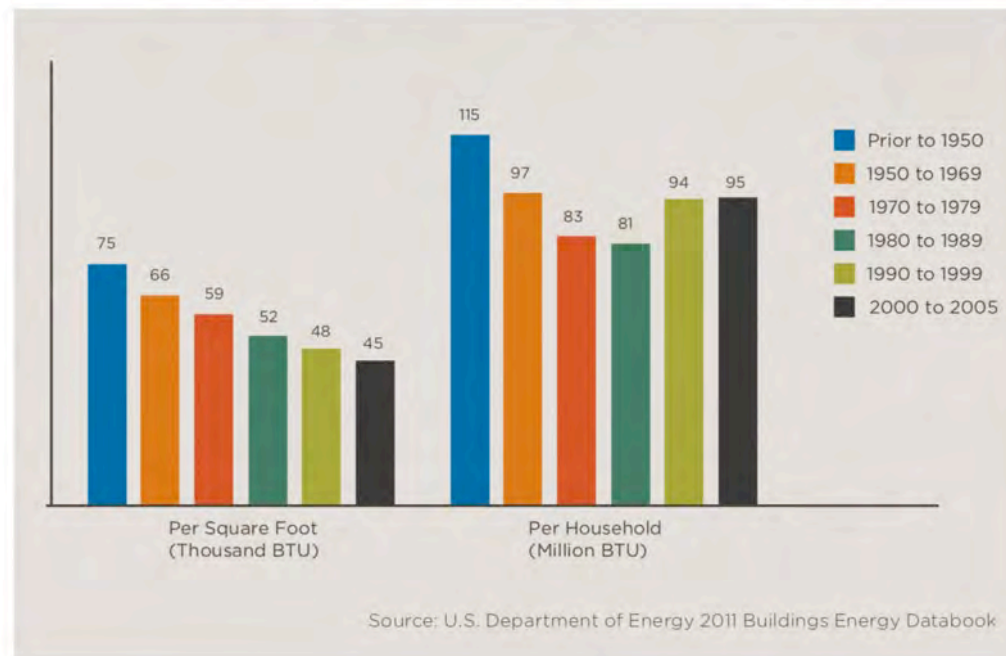


Energy Efficiency

Fuel Consumption

Newer homes are more energy efficient on a square foot basis, however this has been offset by their larger sizes.

Figure 3: Annual Energy Intensity by Housing Vintage



Energy Efficiency

Environmental Impact

When comparing buildings of equivalent size and function, building reuse almost always offers environmental savings over demolition and new construction.

Table 12. Number of Years Required for New Buildings to Overcome Climate Change Impacts from Construction Process

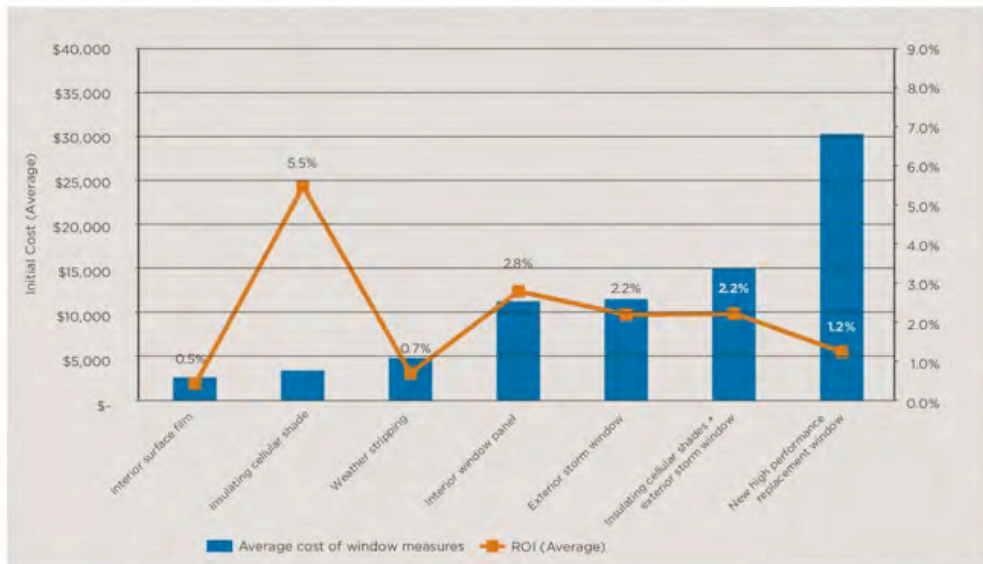
According to this study, it takes 10 to 80 years for a new building that is 30 percent more efficient than an average-performing existing building to overcome, through efficient operations, the negative climate change impacts related to construction. This table illustrates the number of years required for different energy efficient, new buildings to overcome impacts.

Building Type	Chicago	Portland
Urban Village Mixed Use	42 years	80 years
Single-Family Residential	38 years	50 years
Commercial Office	25 years	42 years
Warehouse-to-Office Conversion	12 years	19 years
Multifamily Residential	16 years	20 years
Elementary School	10 years	16 years

Energy Efficiency Windows

- Retrofit measures can achieve performance results comparable to new replacement windows.
- Almost every retrofit option offers a better return on investment than replacement windows.

Figure 10: Average Annual Return on Investment – Portland



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BBB

Saving Windows, Saving Money: Evaluating the energy performance of window retrofit and replacement. Preservation Green Lab. 2012.

Which is ~~Greener~~ More Sustainable

- Energy efficiency
- Demolition (debris and transportation)
- New construction (manufacture and transportation of materials)



Energy Efficiency

Green Roof

Historic buildings can be green and sustainable.



Turf House, Iceland

Energy Efficiency and Historic Preservation

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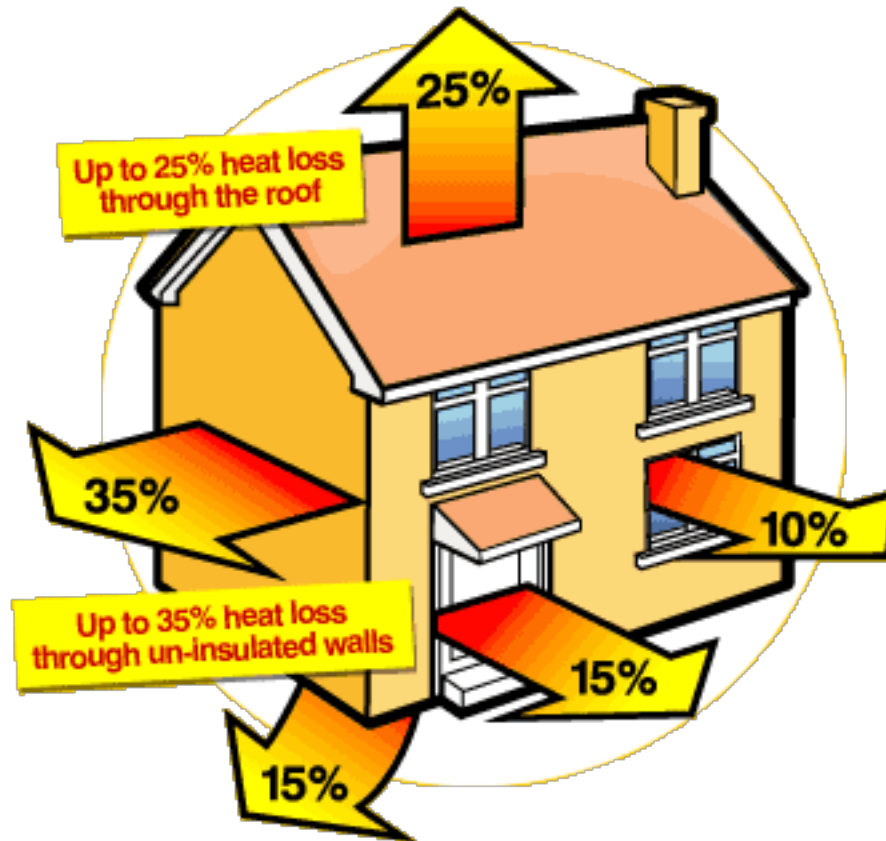
Historic Buildings Can Function Efficiently...

If they are allowed to function as originally intended



Energy Efficiency

Heat Loss



Building Envelope

Masonry Structures



Building Envelope

Wood Structures



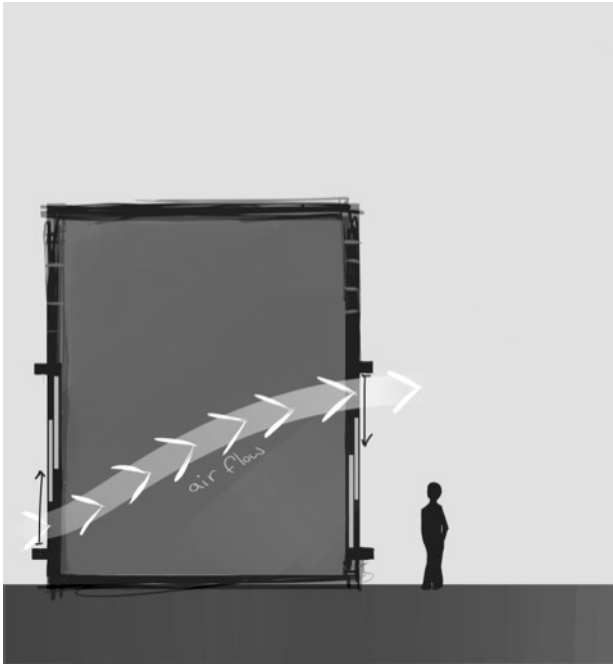
Building Envelope

Shared Walls



Ventilation

Tall, Operable Windows

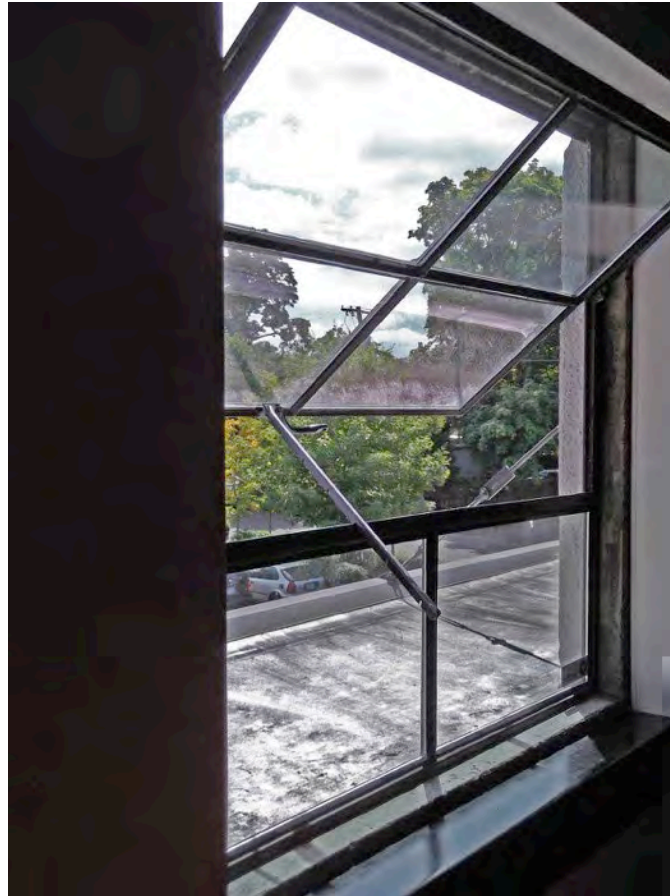


Ventilation Bulkhead Grates

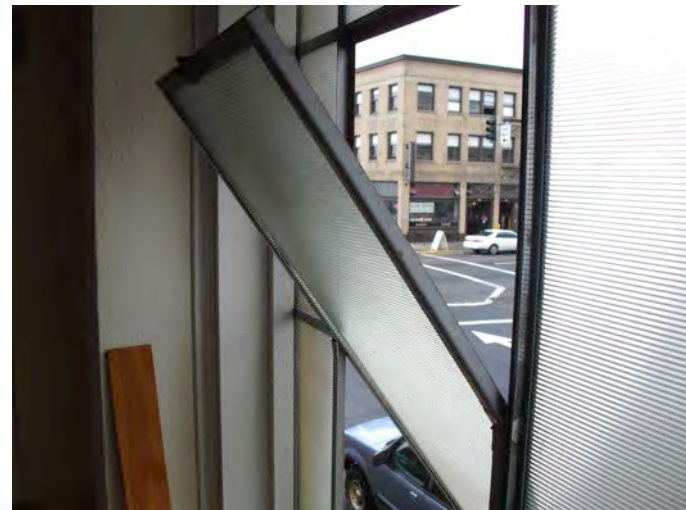
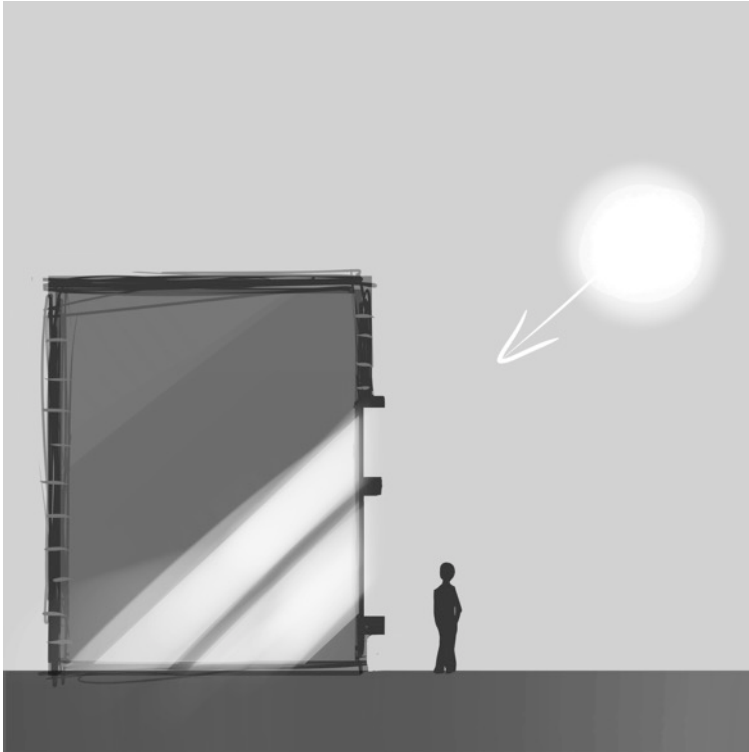


Ventilation

Awning Windows



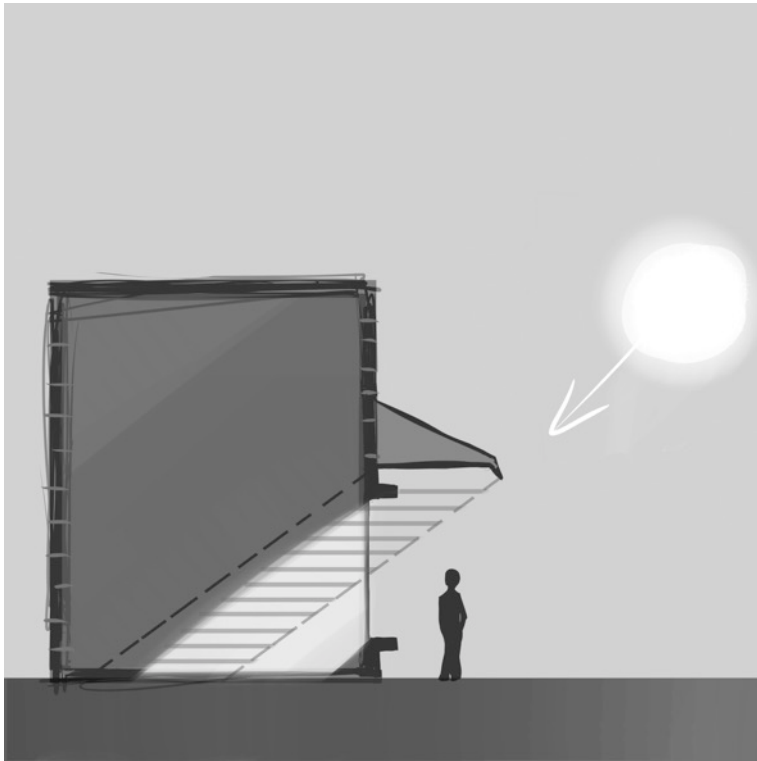
Natural Light Transoms



Prism glass

Additional Aids

Awnings



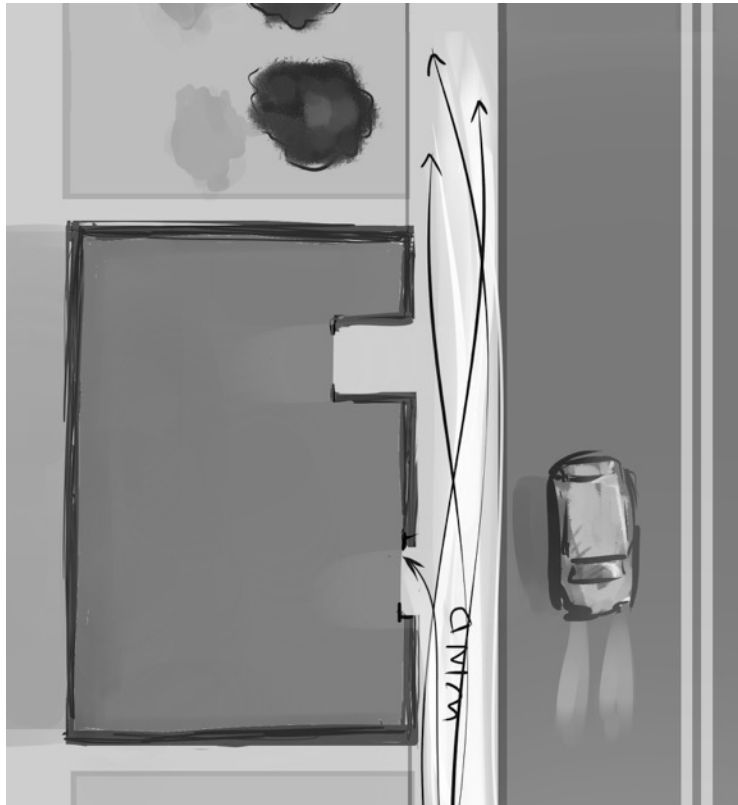
Additional Aids

High, Reflective Ceilings



Additional Aids

Recessed Entries



Why Restore?

Windows

- History/aesthetics: character defining
- Quality: materials and craftsmanship
- Economics: use local craftspeople, lifecycle costs
- Sustainable: existing material, longevity, improve efficiency
- Repairable: windows are inherently repairable



Energy Efficiency

Building Preservation



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Getting Passed The Intimidation Of Renovating Historic Buildings



Farmer's Union Cooperative Building

Eugene





Accomplishments

- Ceiling insulation installed
- Wood windows repaired
- High-efficiency, gas, condensing furnace installed
- Replaced lights with high-efficiency T8 ballast





BOGS
fertilizer



Pacific Cooperative Poultry Producers' Egg-Taking Station Building Eugene





Accomplishments

- Furred out the walls and insulated behind
- Installed photovoltaic solar panels on roof
- Inserted compact fluorescents in historic light fixtures





Figure 23. Solar collectors installed in a compatible manner on low sloping sawtooth monitors. Top Photo: Neil Mishalov, Berkeley, CA.

Solar panels installed on a historic property in a location that cannot be seen from the ground will generally meet the Secretary of the Interior's Standards for Rehabilitation. Conversely, an installation that negatively impacts the historic character of a property will not meet the Standards.

Conn & Huston Grocery Building

Albany





Accomplishments

- Insulated building, better heat retention and cooling
- New heating system
- Daylighting and ventilation through transoms, double-hung windows and skylights
- Increased ventilation by incorporating fans on 15' ceilings
- New Energy Star refrigerator and washing machine in apartment
- Embodied energy retention by saving wood floors, retaining lath-and-plaster walls, re-using windows and renovating the building





Allen Building

Astoria



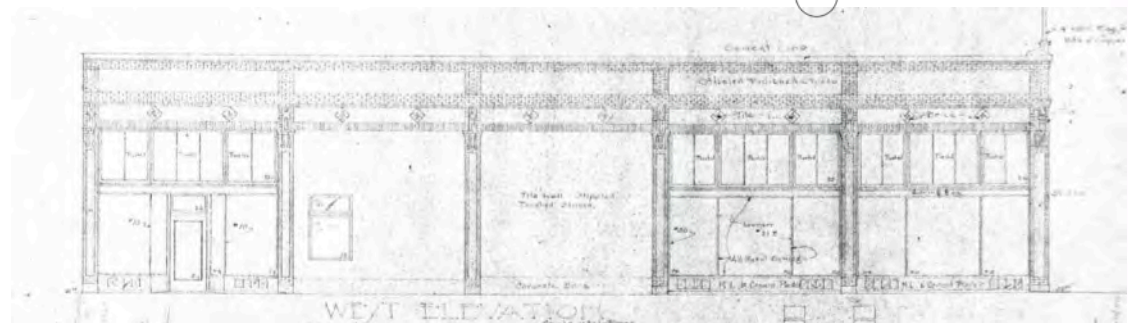
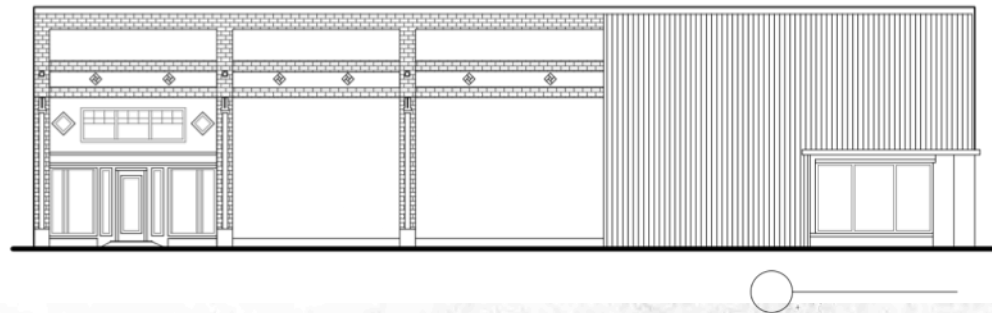
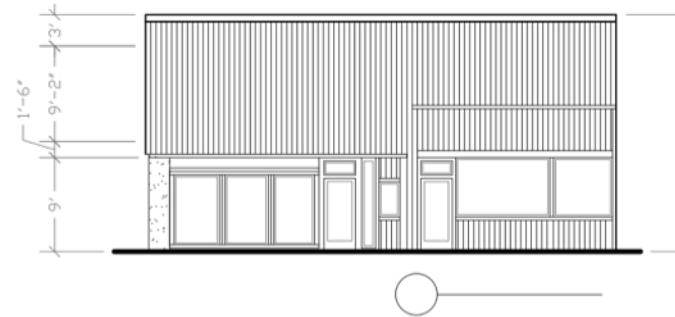
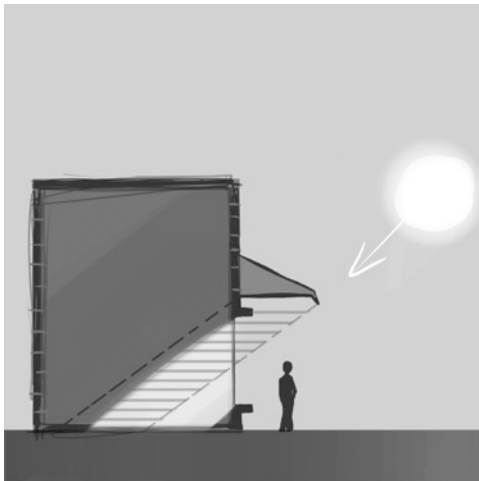
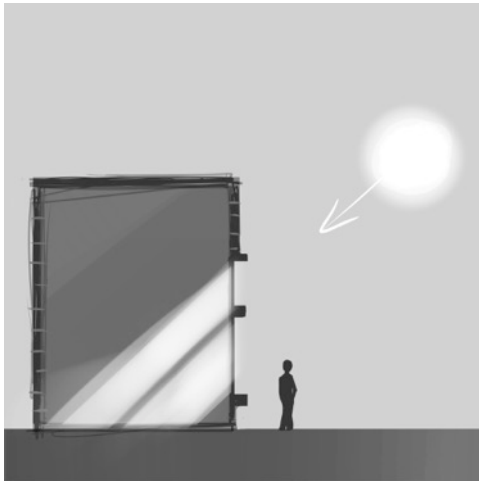
Allen Building

Astoria



Allen Building

Astoria



Allen Building

Astoria



Allen Building

Astoria



Accomplishments:

- Added R12 and R18 insulation on exterior walls and R33 insulation below roof.
- Upgraded the heating system to a ductless heat pump HVAC unit.
- Installed ceiling fans.
- Restored original skylight openings.
- Painted ceilings white to aid light reflectivity.
- Reconstructed storefront window system included double-pane transom windows for heat retention, operable transom windows for air circulation and increased natural light for visibility and solar gain.

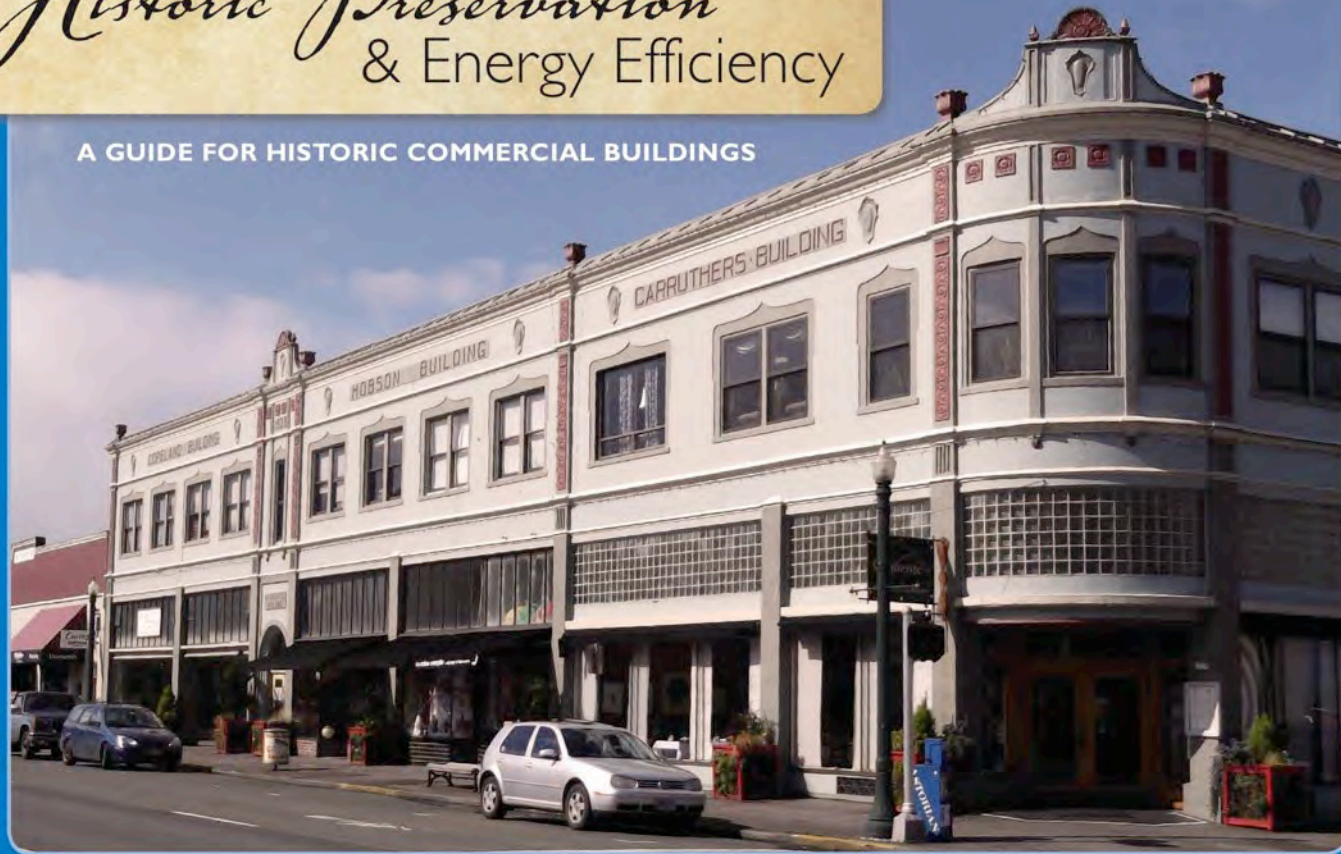


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Historic Preservation & Energy Efficiency

A GUIDE FOR HISTORIC COMMERCIAL BUILDINGS



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https://www.pacificpower.net/content/dam/pcorp/documents/en/pacificpower/savings-energy-choices/wattsmart-business/PP_OR_Historic_Preservation_and_Energy_Efficiency_Booklet.pdf

Resources

NPS Sustainability: <https://www.nps.gov/orgs/1739/sustainability.htm>

Energy Efficiency in Historic Buildings: <https://www.nps.gov/orgs/1739/upload/preservation-brief-03-energy-efficiency.pdf>

Building Stronger Communities: <https://savingplaces.org/building-stronger-communities>

Energy Trust: <https://www.energytrust.org/>

Pacific Power Efficiency: <https://www.pacificpower.net/savings-energy-choices.html>

Contacts

CCC HP Program: <https://www.clatsopcc.edu/learning-communities/historic-preservation-restoration/>

CCC HP Instagram: <https://www.instagram.com/hpclatsopcc/>

CCC HP Facebook: <https://www.facebook.com/ClatsopPreservation>

Lucien Swerdloff email: lswerdloff@clatsopcc.edu

John Goodenberger email: jgoodenberger@clatsopcc.edu



Wrap Up & Reflection



Reflection

What's something new that you learned about today that you would like to try?

What's Next



- Resiliency (Mar)
- In-person TA visits

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Care and collaborate.