



PG&E ENERGY CENTERS

Building Enclosures: Some Resources

From PG&E

On-Demand Training Classes on Building Science Topics

Building Science 1.0 Overview and Introduction to Control Layers

In this two-hour on-demand program, Dr. John Straube explains why an understanding of building science fundamentals is needed by building design professionals. He describes the role of building science in effective design of building enclosures, specifically addressing requirements for control of rain, air movement, vapor diffusion, and thermal separation.

<http://usi.pge.com/event-details?EventID=17920>

Eight One Hour On-Demand Trainings by Dr. John Straube

Building Science 2.1 Introduction to Heat Transfer:

<http://usi.pge.com/event-details?EventID=19142>

Building Science 2.2 Airtightness and Air Barriers:

<http://usi.pge.com/event-details?EventID=19143>

Building Science 2.3 Understanding and Limiting Thermal Bridging:

<http://usi.pge.com/event-details?EventID=19144>

Building Science 2.4 Introduction to Continuous Insulation and Cladding Attachment:

<http://usi.pge.com/event-details?EventID=19145>

Building Science 2.5 Introduction to Windows, Curtain Walls, Window Walls and Shading Design:

<http://usi.pge.com/event-details?EventID=19146>

Building Science 2.6 Introduction to Moisture and Buildings

<http://usi.pge.com/event-details?EventID=19147>

Building Science 2.7 Understanding the Psychrometrics of Condensation

<http://usi.pge.com/event-details?EventID=19148>

Building Science 2.8 Introduction to the Control of Rain and Groundwater Penetration

<http://usi.pge.com/event-details?EventID=19149>

Energy Code Ace

Just about everything you ever wanted to know about Title 24|Part 6 and Title 20. This is an effort of the Statewide Codes & Standards Program. A source for application guides, fact sheets, trigger sheets, training, and more. This information focuses on the 2016 Standards, which remain in effect through 2019.

www.energycodeace.com



For information on classes:

Visit our website at pge.com/energyclasses

California Advanced Homes Program

<https://cahp-pge.com/>

California Advanced Homes Program Master Builder Product Catalogue

<http://cahp-pge.com/wp-content/uploads/2016/09/CAHP-Master-Builder-Product-Catalogue.pdf>

Produced by TRC Solutions for California Utility Multi-Family Energy Efficiency Programs.

Advanced Energy Rebuild

<https://sonomacleanpower.org/advancedenergyrebuild/>

Sonoma Clean Power (SCP), Pacific Gas and Electric Company (PG&E), and Bay Area Air Quality Management District have joined efforts to help homeowners affected by the October 2017 firestorms rebuild energy-efficient, sustainable homes. The program is an enhancement to PG&E's long-standing California Advanced Homes Program, and offers two incentive packages tailored to Sonoma and Mendocino Counties. Each package has a flexible performance pathway or a simple prescriptive menu.

From California Energy Commission

2016 Building Energy Efficiency Standards Main Page

<http://www.energy.ca.gov/title24/2016standards/index.html>

From here you can download a copy of the Standards and the Residential and Nonresidential Compliance Manuals. You can also see a list of approved compliance modeling software, information on local ordinances that exceed the requirements of the 2016 Standards, and other resources.

2016 Joint Appendices – Joint Appendix 4 begins on page 129 of the PDF

<http://www.energy.ca.gov/2015publications/CEC-400-2015-038/CEC-400-2015-038-CMF.pdf>

The values in this appendix must be used for all residential and nonresidential prescriptive compliance calculations. This appendix shows conceptual drawings of wall assemblies, not construction details.

ADDITIONAL RESOURCES:

From American Institute of Architects California Council

Zero Net Energy Primer

<http://www.aiacc.org/2018/04/04/zne-primer-now-available/>

See the resource list towards the end of the document.

From BC Housing (British Columbia, Canada):

R22+ Effective Walls in Wood-Frame Construction in British Columbia

<http://www.victoria.ca/assets/Departments/Planning~Development/Permits~Inspections/Example~Plans/Illustrated-Guide-R22-Effective-Walls-In-Wood-Frame-Construction.pdf>

As the title says, focused on wood frame construction.



R22+ Effective Walls in Residential Construction in British Columbia

<https://www.bchousing.org/research-centre/library/residential-design-construction/ig-R22-effective-walls-residential-construction>

Covers wood frame as well as other wall assembly types. There is an extensive list of additional resources on page 53 of this guide.

Illustrated Guide for Achieving Airtight Buildings

<https://www.bchousing.org/research-centre/library/residential-design-construction/achieving-airtight-buildings&sortType=sortByDate>

Standards of Practice Guide for Air Sealing and Insulation Retrofits

<https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/power-smart/builders-developers/standards-practice-manual-weatherization-draftproofing.pdf>

Web site: Residential Design & Construction Guides

<https://www.bchousing.org/research-centre/library/residential-design-construction&sortType=>

Includes several of the above guides + more.

From BC Hydro (British Columbia, Canada):

Building Envelope Thermal Bridging Guide

<https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/power-smart/builders-developers/building-envelope-thermal-bridging-guide-1.1.pdf>

From National Renewable Energy Lab

Measure Guideline: Incorporating Thick Layers of Exterior Rigid Insulation on Walls

<http://www.nrel.gov/docs/fy15osti/63337.pdf>

Produced by Building Science Corporation for US Department of Energy's Building America program. Residential focus.

From RDH Building Science:

Cladding Attachment Solutions for Exterior Insulated Commercial Walls

<http://rdh.com/wp-content/uploads/2015/12/TB-11-Cladding-Attachment-Solutions-Dec-16-15-FINAL.pdf>

Residential Insulated Sheathing – Installation Guide

<http://rdh.com/wp-content/uploads/2015/10/Residential-Insulated-Sheathing-----Installation-Guide-ROXUL-COMFORTBOARD-IS.pdf>

Distributed by Rockwool, written by staff of RDH Building Science.



From Building Science Corporation:

Builder's Guide to Continuous Insulation

http://msdssearch.dow.com/PublishedLiteratureDOWCOM/dh_0913/0901b80380913ef0.pdf

Distributed by Dow, written by staff of Building Science Corporation.

BSI-085: Windows Can Be A Pain*—Continuous Insulation and Punched Openings

<https://buildingscience.com/documents/insights/bsi-085-windows-can-be-a-pain>

Applicable to installation of manufactured windows in wood framed walls.

