



Building
Energy
Education

fundamentals

Train-the-Trainer Workshop

April 29, 2022



SEDAC

SMART ENERGY DESIGN ASSISTANCE CENTER

Providing effective energy strategies for buildings and communities

BEE Fundamentals



Introduces community college students and young professionals to **energy efficiency and energy code topics** to prepare **the next generation of professionals** to integrate energy efficiency into their work.

Supported by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) under the Building Technology Office (BTO) and Advanced Building Construction with Energy Efficient Technologies & Practices (ABC), Award Number DE-EE0009092.

Who Created BEE Fundamentals?

The Smart Energy Design Assistance Center (SEDAC), an applied research program at the University of Illinois.

SEDAC's Mission:

Reduce the energy footprint of Illinois and beyond



BEE Fundamentals Partners & Participants



Illinois Environmental
Protection Agency

Lewis & Clark Community College
McHenry County College
Moraine Valley Community College
Southwestern Illinois College
Triton College
Illinois Central College
Kishwaukee College
Olive-Harvey College
Oakton Community College
Illinois Eastern Community College
John A Logan College
Hartland Community College
Rend Lake College
Harper College

University of Illinois
University of Chicago
Northern Illinois University
Chicago Public Schools

Ameren Illinois / Leidos
Illinois Green Alliance (IGA)
Illinois Green Economy Network (IGEN)

Village of Matteson
City of Rock Island
City of Naperville
City of Ottawa
Village of Midlothian
City of Peoria **and many more**



HAWAII STATE
Energy Office

Kauai Community College
Honolulu Community College
UH Maui College
Brigham Young University-Hawaii

Leidos – Hawaii Energy
Hawaiian Electric

Island Green Architecture
Bowers + Kubota Consulting
STUDIO OXEYE
D.R. Horton
Saito Design Associates
Plumbing & Mechanical Contractors Association of Hawaii
(PAMCA HI)
Islandwide mechanical service
Oahu Air Conditioning Service, Inc.
TMA Architects
Economy Plumbing & AC
Bowers and Kubota Consulting
Mason Architects
S. Biniaris Architect
Colliers

Kauai County
Maui County Office of Economic Development
City & County of Honolulu
County of Hawaii
Hawaii Community Development Authority
Hawaii Department of Education **and many more**



Nevada Governor's
Office of Energy

Western Nevada College
College of Southern Nevada
Truckee Meadows Community College

Clark County School District

Nevada Builders Alliance
Home Energy Connection
GRN Vision

Desert Research Institute
International Code Council (ICC)
Envirolution
Plumbing, Heating, Colling Contractors of Nevada
(PHCC NV)
Home Energy Connection

Clark County
City of Las Vegas
City of North Las Vegas
City of Henderson
City of Mesquite
City of Elko
City of Sparks
City of Reno **and many more**





Pacific Northwest
NATIONAL LABORATORY

Ian Blanding





SEDAC

SMART ENERGY DESIGN ASSISTANCE CENTER

Sumi Han



Linda Larsen



Shawn Maurer



Introductions

- Name, organization, position
- How are you involved in training?
- Why you are considering teaching BEE Fundamentals?
- What do you hope to learn in this workshop?



Wiss, Janney, Elstner Associates, Inc.



Agenda

- Why teach building energy fundamentals?
- Intro to BEE Fundamentals
- Example module: Introduction to Energy Codes
- Activities and discussion (Syllabus scavenger hunt)
- Wrap-up and call to action

Why Teach Building Energy Fundamentals?

Why Teach Building Energy Fundamentals?

All building related jobs address energy efficiency in some way



Architects & Engineers

- ✓ design for efficiency
- ✓ ensure code compliance and safety



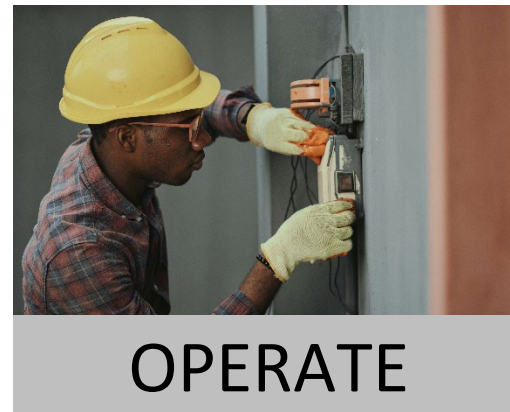
Contractors and Construction Managers

- ✓ build efficiently
- ✓ make buildings more efficient when they renovate



Installers & Technicians

- ✓ install efficient equipment
- ✓ make sure it is operating properly



Building Operators

- ✓ ensure that buildings run smoothly and efficiently
- ✓ maintain efficiency

Why Teach Building Energy Fundamentals?

To inspire students to enter ...

Energy efficiency careers

86% of construction employers reported that it was difficult to find qualified job applicants

97% of professional and business service employers reported that it was difficult to find qualified job applicants

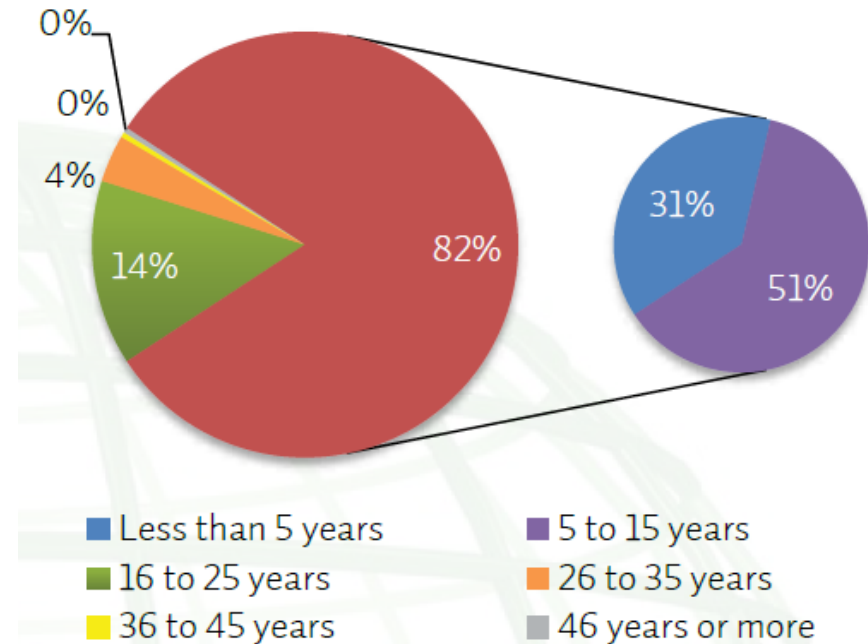
USEER 2021 Jobs Report

<https://www.energy.gov/sites/default/files/2021-07/USEER%202021%20Main%20Body.pdf>

International Code Council (ICC) "The Future of Code Officials". 2014

Building code careers

Figure 2: Plans to Leave the Building Regulatory Profession



The need for energy efficiency workers

Lots of demand

“We’ve got a number of agencies who have pretty sizable wait lists, but there is insufficient resources to provide assistance to all the people who need it.”

“In a perfect world I’d like to just do everybody. There’s so much need out there. But we have to prioritize.”

And not enough workers

“Regardless of the type of job you are always needing more people. We could constantly bring them in here.”

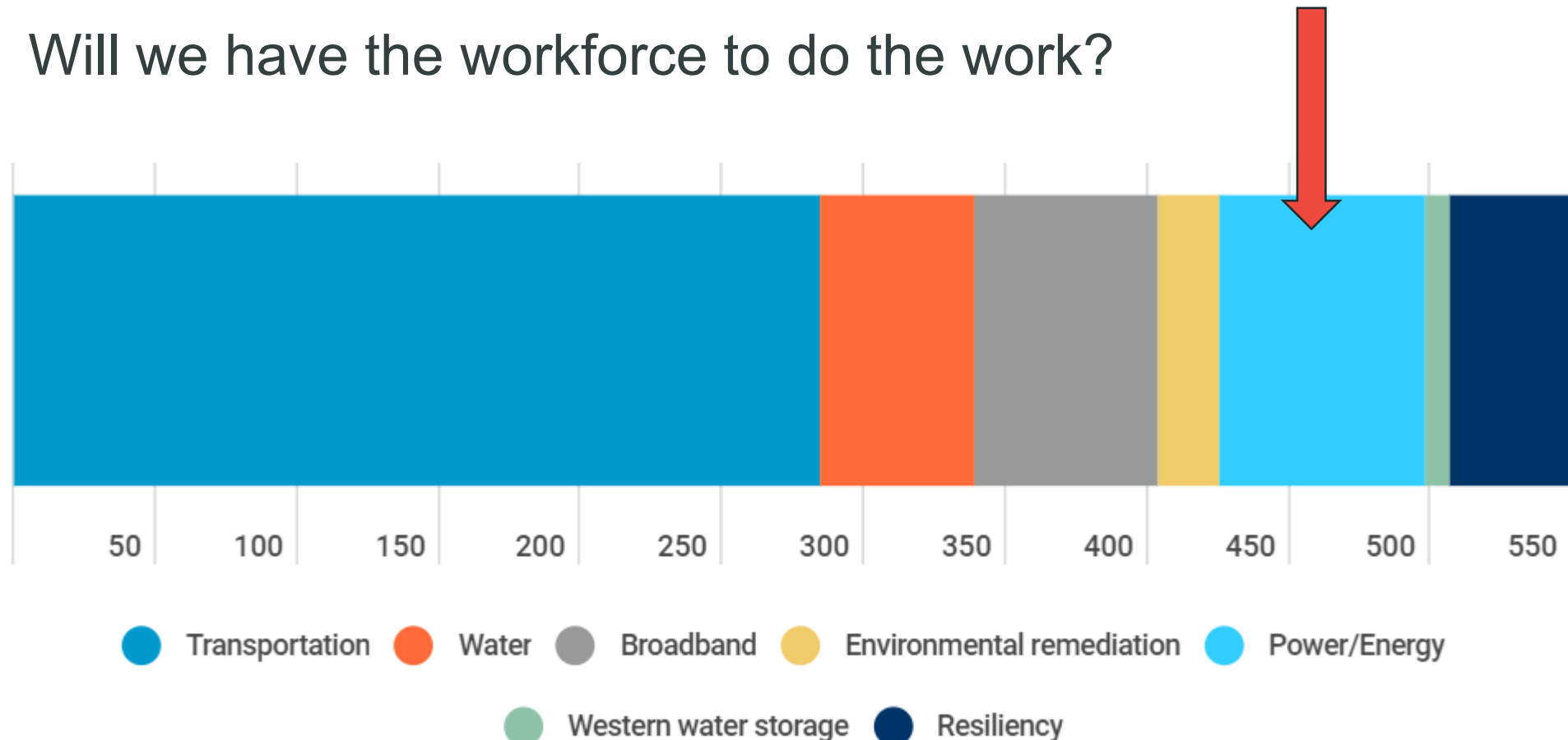
“The main thing we need is people on the crews doing the work.”

“We’re looking for more assessment folks. That would trickle down to needing more contractors.”

The Opportunity: Funding for Energy Efficiency

Federal Infrastructure Bill: \$73 billion for **energy & power**

Will we have the workforce to do the work?



“We Want Qualified Candidates”



Skills of the
trade

+



Energy
efficiency
basics

+



Workplace
skills

+



Basic
academic
skills

+



Personal
effectiveness
skills

Lack of training in energy efficiency

Trade and community college programs are teaching people basic carpentry, mechanical, and technical skills

But

These programs may not cover much energy efficiency

“People don’t get a ton of exposure to energy efficiency in these programs.”

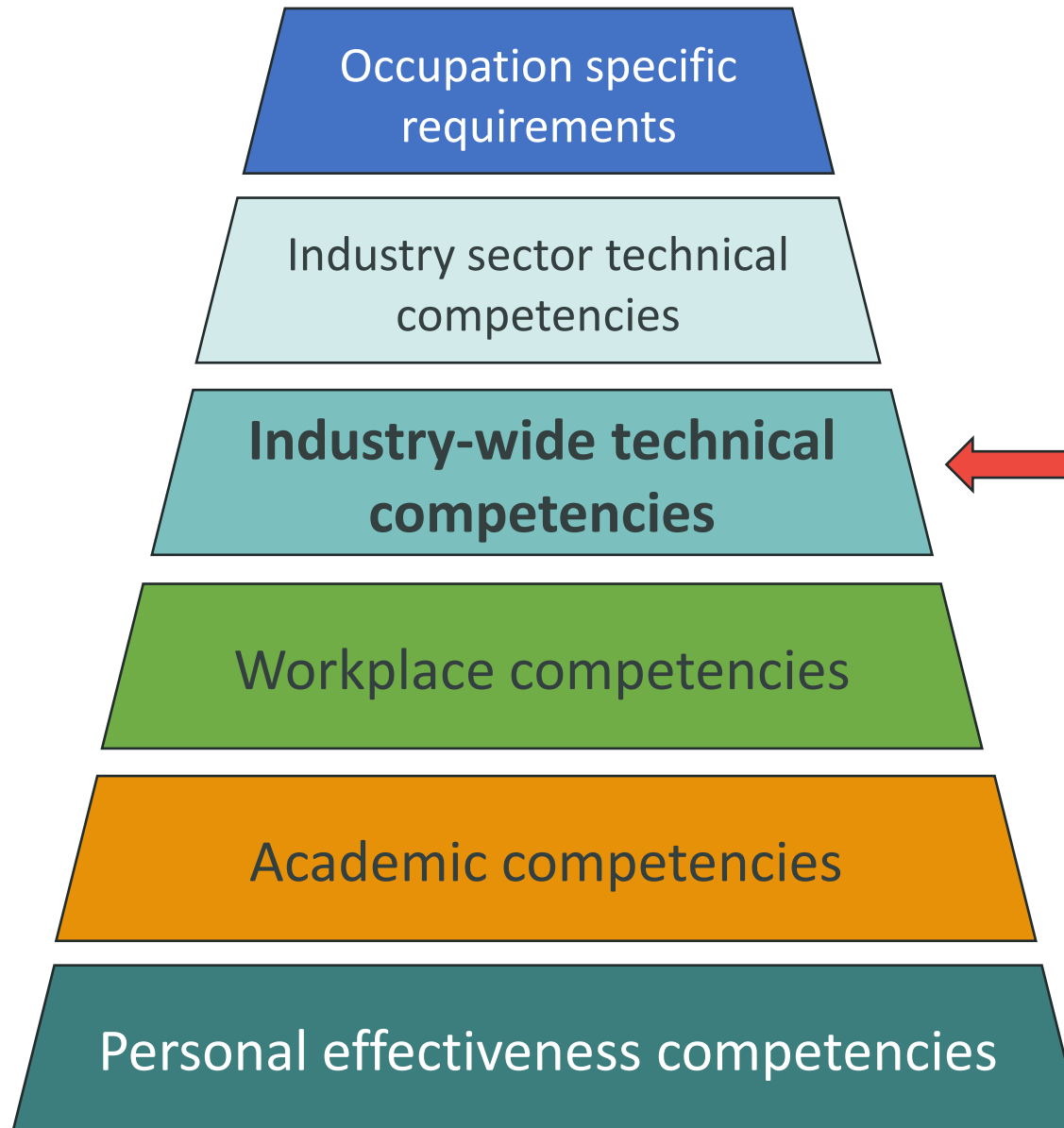
“Trade programs may not address whole building approaches.”

Lack of exposure to the energy code

- Many students have very little exposure to the energy code in their training
- **Energy code training is focused on continuing education for existing professionals, not students**



Department of Labor competency model



Building energy fundamentals

- Fundamentals of energy and power
- Energy efficiency
- Policies and regulations

What building energy fundamentals will your students need?

DOE's Building Science Education Guidelines

identify four core training areas

1. Integration of the Whole-Building System

2. Building Science Principles

3. Operations and Maintenance

4. Building Testing (energy codes)

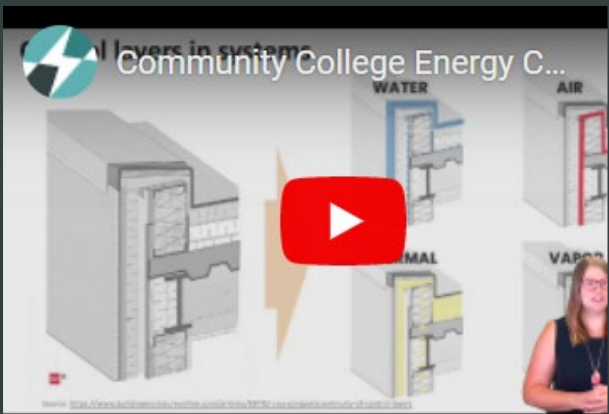
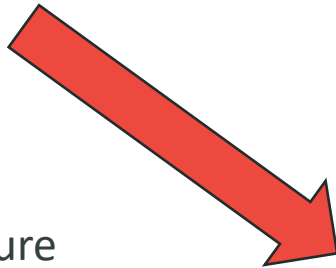


**Building
Energy
Education**

Building Science Principles Your Students Need To Know

Bolded topics are addressed in our envelope modules

- **Heat transfer**
- **Moisture transport**
- **Convective mass (air) transport**
- **Material selection**
- **Control layers**
- Hygrothermal analysis
- HVAC systems
- HVAC interactions with enclosure
- **Fenestration**
- Plumbing systems
- Electrical systems
- Lighting, appliances, misc. loads
- Control/automation systems
- Indoor environmental quality



Community College Energy C...

Envelope Modules


- 5. Envelope & Insulation Fundamentals
- 6. Walls & Openings
- 7. Roofs & Ceilings
- 8. Foundations & Floors

See [DOE's Building Science Education Guidelines](#)

Building Science Principles Your Students Need To Know

Bolded topics are addressed in our mechanical & electrical modules

- Heat transfer
- Moisture transport
- Convective mass (air) transport
- Material selection
- Control layers
- Hygrothermal analysis
- **HVAC systems**
- **HVAC interactions with enclosure**
- Fenestration
- **Plumbing systems**
- **Electrical systems**
- **Lighting, appliances, misc. loads**
- **Control/automation systems**
- **Indoor environmental quality**



Community College Energy C...

Mechanical & Electrical Modules

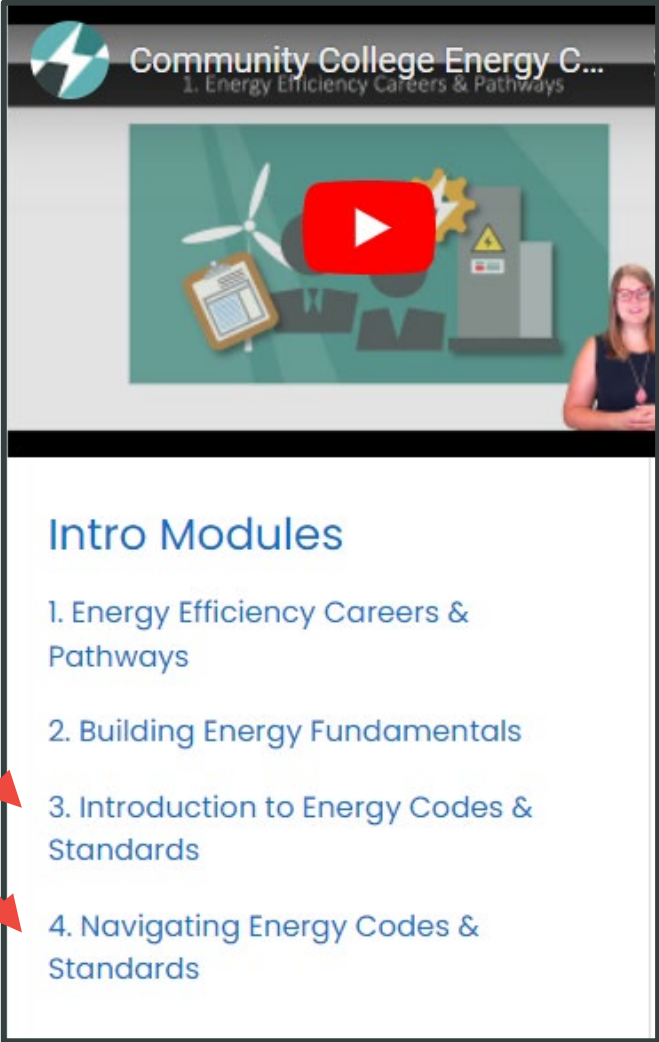
- 9. Mechanical Equipment Sizing
- 10. Duct Design & Installation
- 11. Mechanical Ventilation
- 12. Lighting

See [DOE's Building Science Education Guidelines](#)

Building Testing Principles Your Students Need to Know

Bolded topics are addressed in our intro modules

- Commissioning
- Diagnostics and forensics
- Performance monitoring & assessment
- **National codes and standards**
- Certification programs

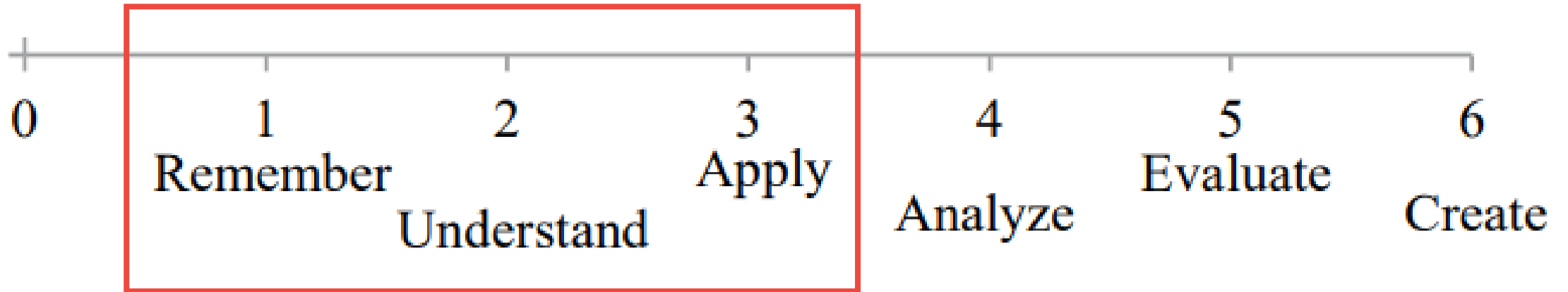


Community College Energy C...
1. Energy Efficiency Careers & Pathways

Intro Modules

1. Energy Efficiency Careers & Pathways
2. Building Energy Fundamentals
3. Introduction to Energy Codes & Standards
4. Navigating Energy Codes & Standards

Proficiency levels

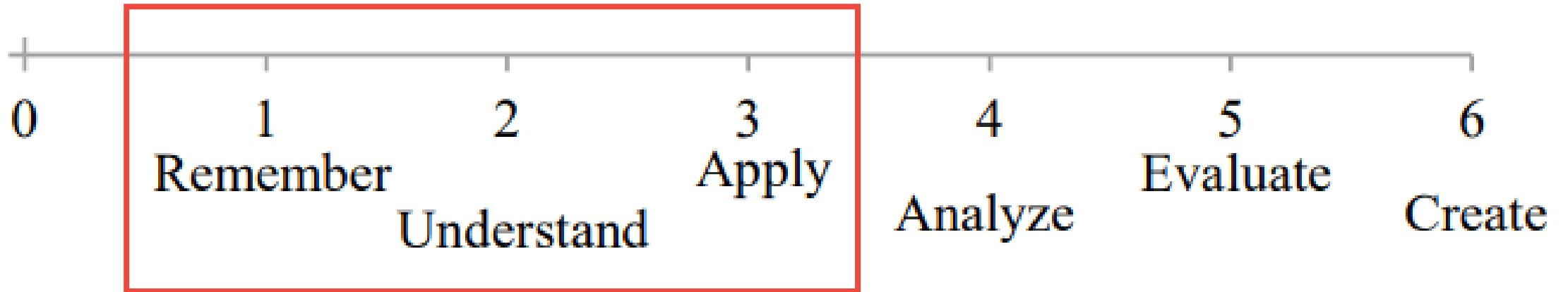


In general, modules focus on proficiency levels 1-3.

Higher proficiency levels will be required for some professions.

These are **introductory courses** to the topics that should apply to most professions.

Proficiency levels



Presentations and videos help students **remember & understand**.

Worksheets, quizzes, discussion prompts, and in-class activities help students **apply** what they've learned.

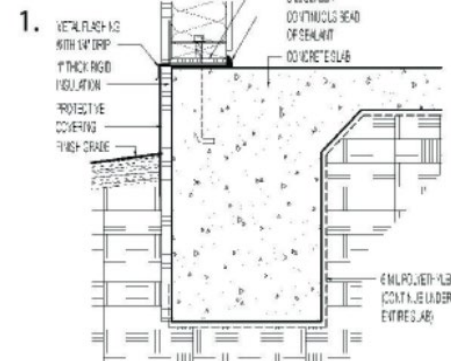
2.2. Heat Transfer and the Building Envelope

Module 2: Building Energy Fundamentals
Part 2

Objective: Describe the way control layers reduce energy transfer and how they are measured.



Draw the Control Layers! Slab Edge Insulation



Heat Transfer Labs and Demonstrations

Heat Transfer by Conduction Demonstration

Adapted from a lab from [Western Oregon University](#).

Learning objective:

Students will be able to explain heat transfer by conduction and describe typical materials that are thermal conductors and thermal insulators.

Overview:

As a teacher demonstration or in small groups, students will place the three spoons in a bowl of hot water and observe the difference in temperatures between the three spoons.

Materials:

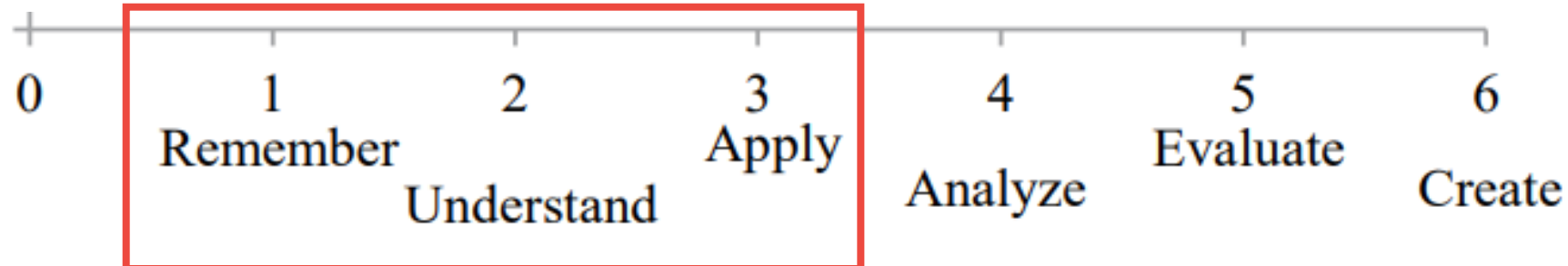
- A bowl or pot of water
- A way to heat the water
- 3 spoons: plastic, metal, and wood

Proficiency levels by profession

[Guidelines for Building Science Education \(pnml.gov\)](http://pnml.gov)

Select the proficiency level that is most appropriate for your students

	Average general contractor	Average HVAC/Mechanical contractor	Average Energy Auditor
Heat transfer	3	4	3
Material selection	3	2	3
Controls layer	5	4	3
HVAC systems	4	5	3
Plumbing systems	4	3	3
Lighting/appliances	3	3	3
National codes and standards	3	3	3



Content starts out general and gets more advanced

More
general



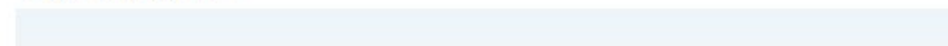
11.1 Fundamentals of Indoor Air Quality

Topic's progress



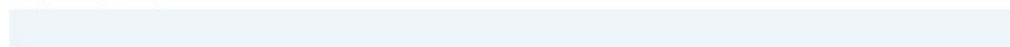
11.2 Fundamentals of Building Ventilation

Topic's progress



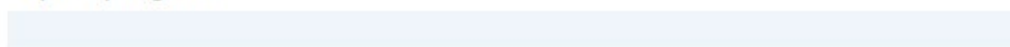
11.3 Minimum Ventilations Standards

Topic's progress



11.4 Energy Code Ventilation Requirements

Topic's progress



Select the content that
is most appropriate for
your students

More
advanced

Intro to BEE Fundamentals Curriculum



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fundamentals

BEE Fundamentals Program Webpage

https://smartenergy.illinois.edu/bee_fundamentals/



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Who We Serve ▾

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Building Energy Education Fundamentals

Home > Energy Code Training > Building Energy Education Fundamentals



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Teach energy efficiency through energy code basics

Hands-on Curriculum | Instructor Training | Resources

Instructor Toolkit:
How to Use our Curriculum



Access our Modules!
Login to our Moodle Site



Where to start: Instructor Toolkit



<https://smartenergy.illinois.edu/instructor-toolkit>

Learn more about our program and how to use our curriculum.



ABOUT OUR PROGRAM

What is this training program about?	+
Why all the focus on energy codes?	+
Who should use this program?	+
Will this training prepare students for a job or certification exam?	+
Who created this training program?	+
How can I be involved and get updates?	+



USING OUR CURRICULUM

Are the modules free to use?	+
Do I need to use all of the modules?	+
How should I select which curriculum to use?	+
How do my students and I access the modules?	+
Can my students work through the material on their own?	+
How can I provide feedback?	+

Instructor Toolkit

Instructor Toolkit: How to Use our Curriculum




<https://smartenergy.illinois.edu/instructor-toolkit>

Preview our modules to select modules or sections of modules to include in your class.

INTRO MODULES

Community College Energy Code Training Program: ... [Copy link](#)

1. Energy Efficiency Careers & Pathways



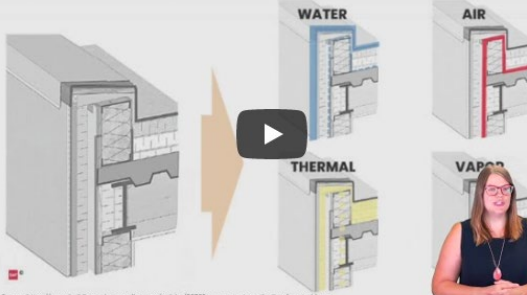
Watch on [YouTube](#)

1. Energy Efficiency Careers & Pathways	+
2. Building Energy Basics	+
3. Introduction to Energy Codes & Standards	+
4. Navigating Energy Codes & Standards	+

ENVELOPE MODULES

Community College Energy Code Training Program: ... [Copy link](#)

Control layers in systems




Watch on [YouTube](#)

5. Envelope Fundamentals	+
6. Walls & Openings	+
7. Roof & Ceiling Insulation	+
8. Foundations & Floors	+

MECHANICAL AND ELECTRICAL MODULES

Community College Energy Code Training Program: ... [Copy link](#)




Watch on [YouTube](#)

9. Mechanical Equipment Sizing	+
10. Duct Design & Installation	+
11. Mechanical Ventilation	+
12. Lighting	+

ADVANCED MODULES

Community College Energy Code Training Program: ... [Copy link](#)



Watch on [YouTube](#)

13. Beyond Code	+
14. Net Zero Buildings	+
15. Existing Building Renovations	+

Instructor toolkit: Preview teaching materials

Preview lesson plans, presentations, and other activities to get a feel for the curriculum and how you might use it in your class.

WHAT TOOLS CAN INSTRUCTORS USE?



Presentations



Worksheets



In-Class Activities



Videos

Access the Curriculum on Moodle

<https://learn.smartenergy.illinois.edu/>



Next, login (for free) to our Moodle Site access our modules!
Sign in as an instructor or student

A screenshot of the SEDAC eLearning login page. The page has a light gray header with the SEDAC logo (a green and black stylized 'S' with a lightning bolt) and the text "SEDAC | I" in bold black letters, with "SMART ENERGY DESIGN ASSISTANCE CENTER" in smaller text below. The main content area is split into two sections. On the left is a large blue box with the text "SEDAC eLearning" in white, followed by "Cookies must be enabled in your browser" with a question mark icon, "Is this your first time here?" in white, and "For full access to this site, you first need to create an account." in white. On the right is a white box with the text "Already have an account?" in black. Below this are two input fields: one for "username" with a user icon and one for "password" with a lock icon and a series of dots. Below the password field is a checkbox labeled "Remember username" which is checked. Below these fields is a blue "Log in" button. Below the button is a link "Forgotten your username or password?" in blue. At the bottom of the white box is a gray button labeled "Create new account".

SEDAC | I
SMART ENERGY DESIGN ASSISTANCE CENTER

SEDAC eLearning

🍪 Cookies must be enabled in your browser ?

Is this your first time here?

For full access to this site, you first need to create an account.

Already have an account?

👤 username

🔒

☒ Remember username

Log in

[Forgotten your username or password?](#)

Create new account

How to Navigate Moodle

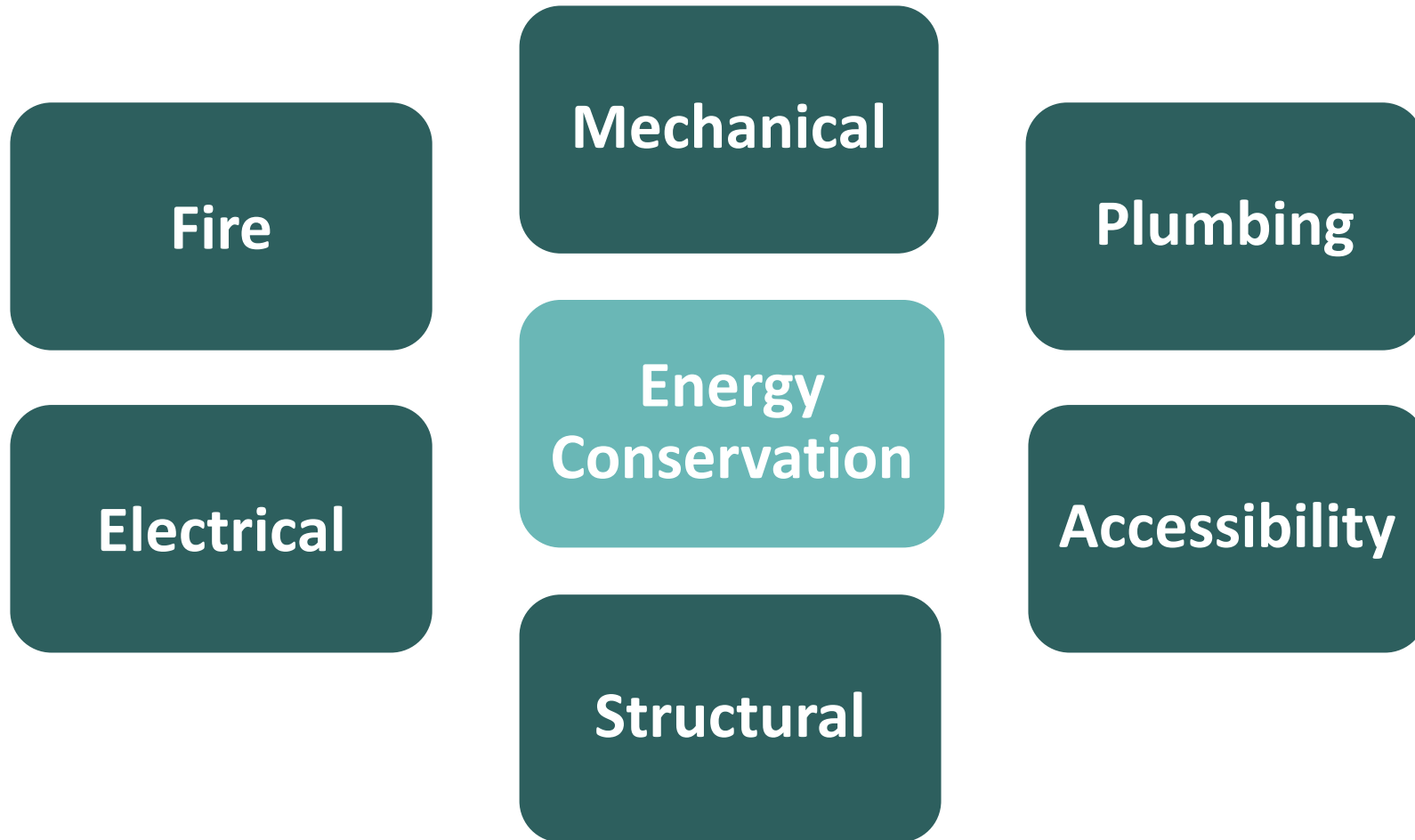


Example module: 3.1 What are Energy Codes & Standards?

**Module 3. Introduction to energy codes & standards
Part 1**

A. Energy codes & standards: some definitions

Energy conservation code: one of many building codes



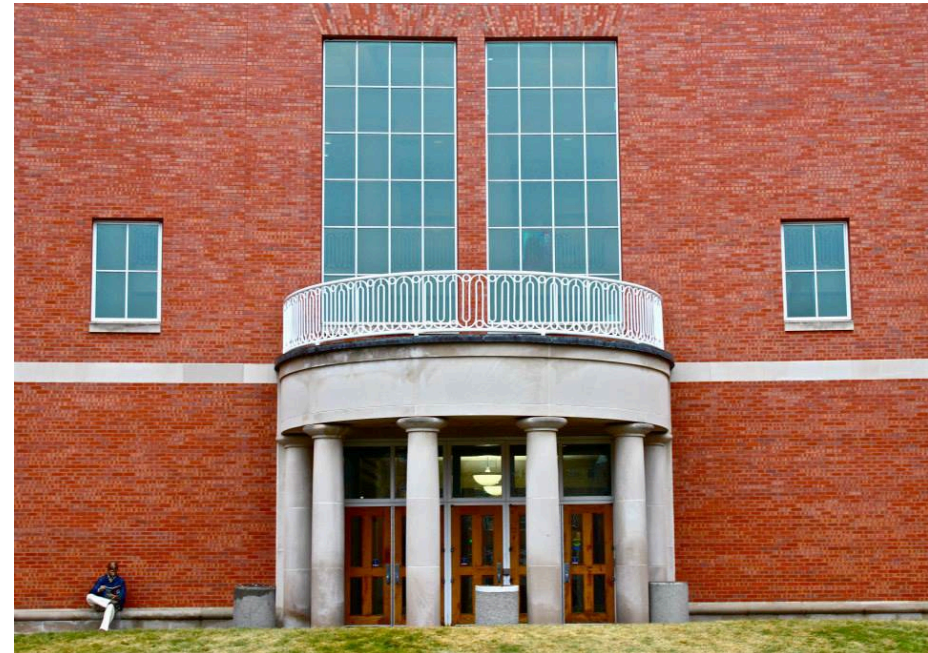
Purpose of Energy Codes

Codes & standards to make buildings safe, healthy & accessible:

- Fire
- Mechanical
- Plumbing
- Electrical
- Structural
- Zoning
- Accessibility
- More...

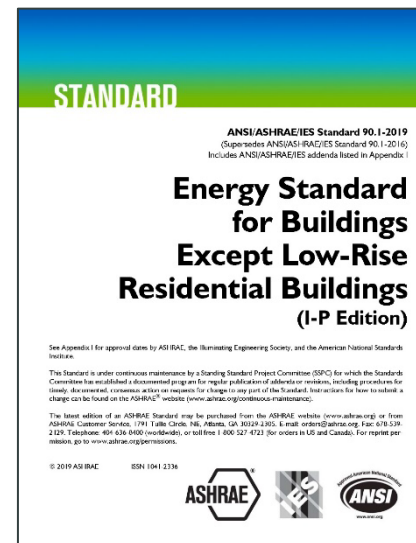
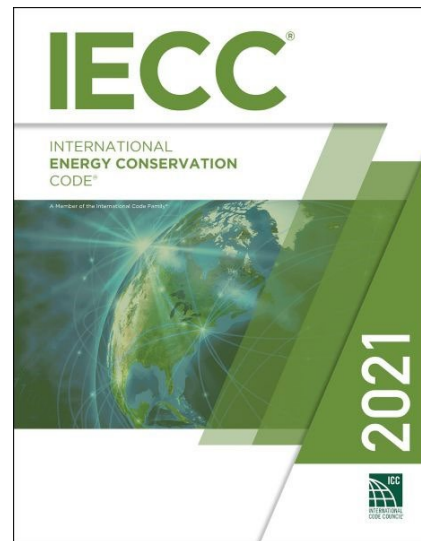
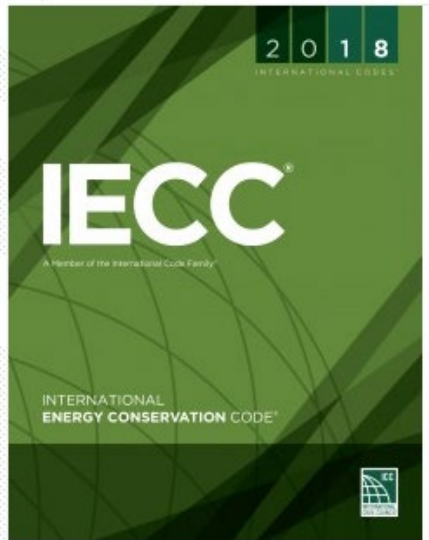
Codes & standards to save energy and money:

- Energy Conservation



What are (building) energy (conservation) codes?

- The Energy Code establishes **minimum** requirements for design and construction of energy efficient buildings.
- The Energy Code is not intended to prevent the installation of any material or to prohibit any design or method of construction.



Energy codes apply to residential and commercial buildings



Residential

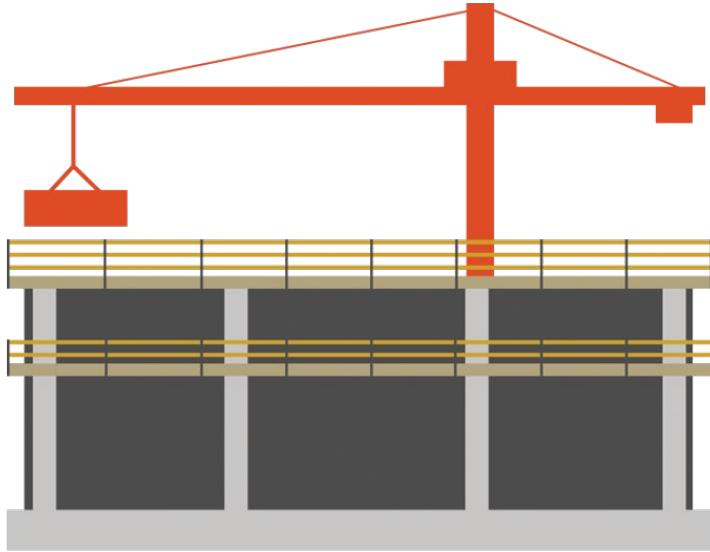
- A detached 1-2 family dwelling
- Multi-family housing 3 stories or lower (some codes differ)



Commercial

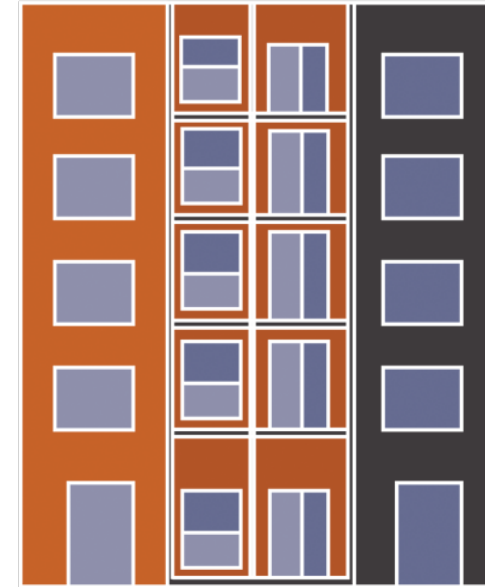
- Any commercial or public sector building
- Multi-family housing units 4 stories or higher (some codes differ)

Energy codes & standards apply to new & existing buildings



New Buildings

- Anything requiring a permit



Existing Buildings

- Any additions, alterations requiring a permit

Energy codes make allowances for different climate zones



Image source: Pexels.com

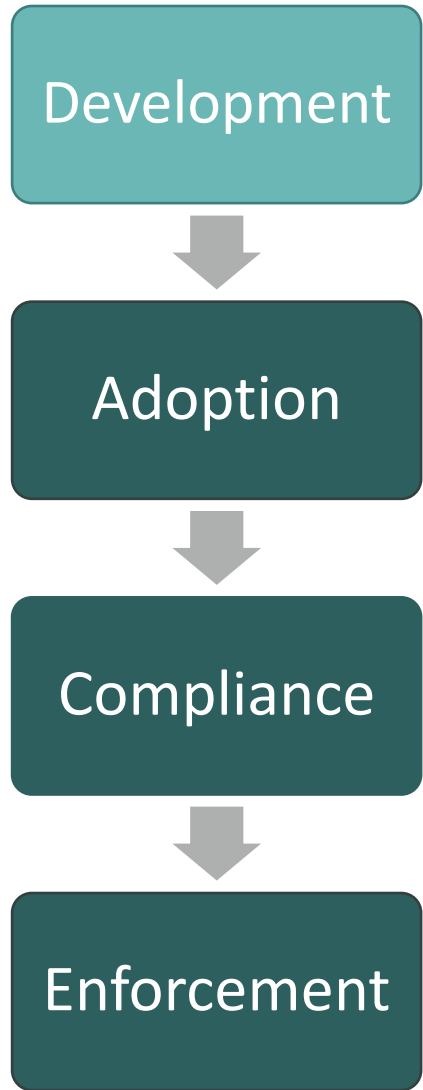
versus



Image source: Pexels.com

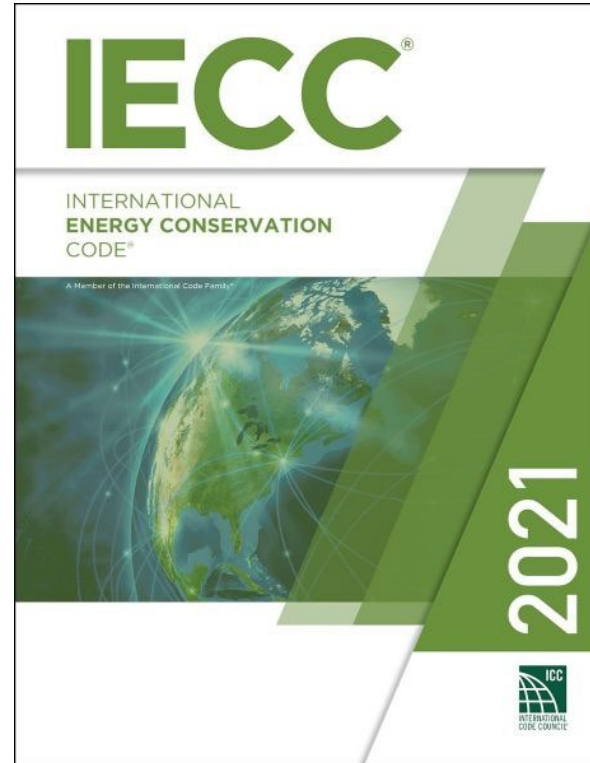
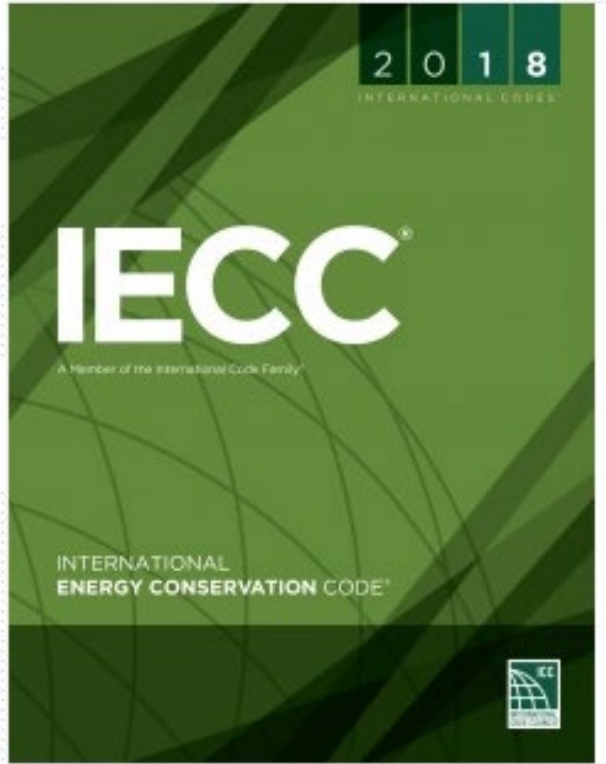
B. Energy code development and adoption

Energy code development



Model energy codes & standards are typically developed by a few national organizations.

Example of model energy code



The International Energy Conservation Code (IECC) is published by the International Code Council (ICC).

Contains both Residential and Commercial provisions

New version is updated every 3 years (ex. 2015, 2018, 2021...)

Example of model energy standard



ANSI/ASHRAE/IES Standard 90.1-2019
(Supersedes ANSI/ASHRAE/IES Standard 90.1-2016)
Includes ANSI/ASHRAE/IES addenda listed in Appendix I

Energy Standard for Buildings Except Low-Rise Residential Buildings (I-P Edition)

See Appendix I for approval dates by ASHRAE, the Illuminating Engineering Society, and the American National Standards Institute.

This Standard is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the Standard. Instructions for how to submit a change can be found on the ASHRAE® website (www.ashrae.org/continuous-maintenance).

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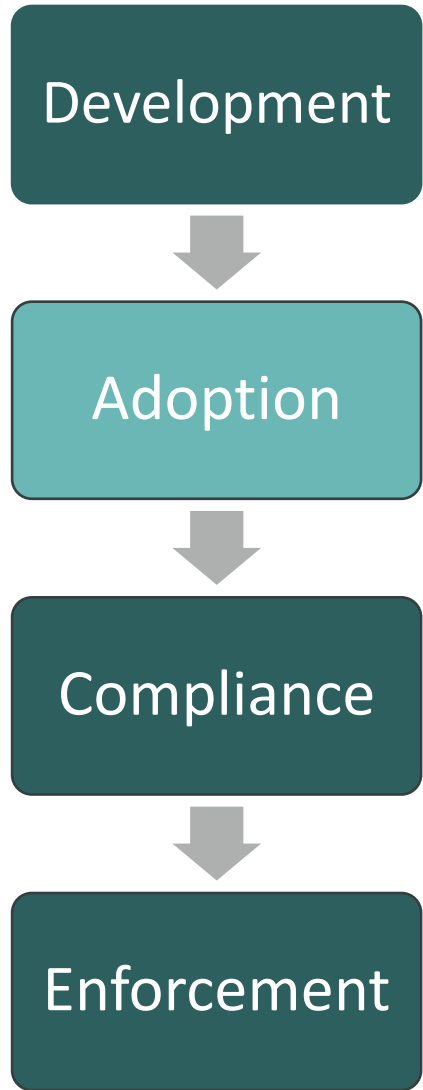


ANSI/ASHRAE/IES Standard 90.1
Energy Standard for Buildings Except for
Low-Rise Residential Buildings (ASHRAE
90.1) is published by ASHRAE, IES & ANSI.

Contains only Commercial provisions

New version is updated every 3 years (ex.
2016, 2019, 2022...)

Energy code adoption



- Energy codes are adopted at state and local government levels.
- Some jurisdictions adopt the model energy code as is.
- Some jurisdictions adopt the model energy code with amendments.

Examples of energy codes with amendments

CHAPTER 1 [CE] SCOPE AND ADMINISTRATION

SECTION C101 SCOPE AND GENERAL REQUIREMENTS

C101.1 Title. This code shall be known as the International Energy Conservation Code of [NAME OF JURISDICTION] and shall be cited as such: Illinois Energy Conservation Code or "this Code" and shall mean:

With respect to the State facilities covered by 71 Ill. Adm. Code 600.Subpart B:

This Part, all additional requirements incorporated within Subpart B (including the 2018 International Energy Conservation Code, including all published errata but excluding published supplements that encompass ASHRAE 90.1-2016), and any statutorily authorized adaptations to the incorporated standards adopted by CDB are effective July 1, 2019.

With respect to the privately funded commercial facilities covered by 71 Ill. Adm. Code 600.Subpart C:

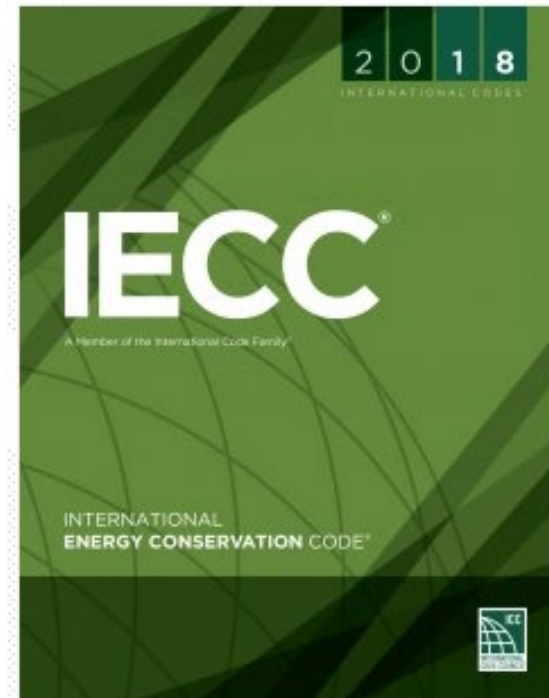
This Part, all additional requirements incorporated within Subpart C (including the 2018 International Energy Conservation

C101.1.3 Adaptation. The Board may appropriately adapt the International Energy Conservation Code to apply to the particular economy, population, distribution, geography and climate of the State and construction within the State, consistent with the public policy objectives of the EEB Act.

C101.5 Compliance. ~~Residential buildings shall meet the provisions of IECC—Residential Provisions. Commercial buildings shall meet the provisions of IECC Commercial Provisions—the Illinois Energy Conservation Code covered by 71 Ill. Adm. Code 600.Subpart C.~~ The local authority having jurisdiction (AHJ) shall establish its own procedures for enforcement of the Illinois Energy Conservation Code. Minimum compliance shall be demonstrated by submission of:

1. Compliance forms published in the ASHRAE 90.1 User's Manual; or
2. Compliance Certificates generated by the U.S. Department of Energy's COMcheck™ Code compliance tool; or
3. Other comparable compliance materials that meet or exceed, as determined by the AHJ, the compliance forms published in the ASHRAE 90.1 User's Manual or the U.S. Department of Energy's COMcheck™ Code compliance tool; or

The current (as of 2021) Illinois Energy Code is based on the 2018 IECC with Illinois Amendments.



Examples of energy codes with amendments

The 2006 Energy Conservation Code of the State of Hawaii shall be deleted in its entirety and replaced by the 2015 International Energy Conservation Code with the proposed amendments.

AMENDMENTS TO THE 2015+ ICC INTERNATIONAL ENERGY CONSERVATION CODE

§3-181-6 Title. IECC section 101.1 is amended to read as follows:

"101.1 Title. This code shall be known as the [International] Energy Conservation Code of the State of Hawaii, and shall be cited as such. It is referred to herein as "this code"." [Eff
] (Auth: HRS §107-29) (Imp: HRS §§107-24, 107-25)

Reason:

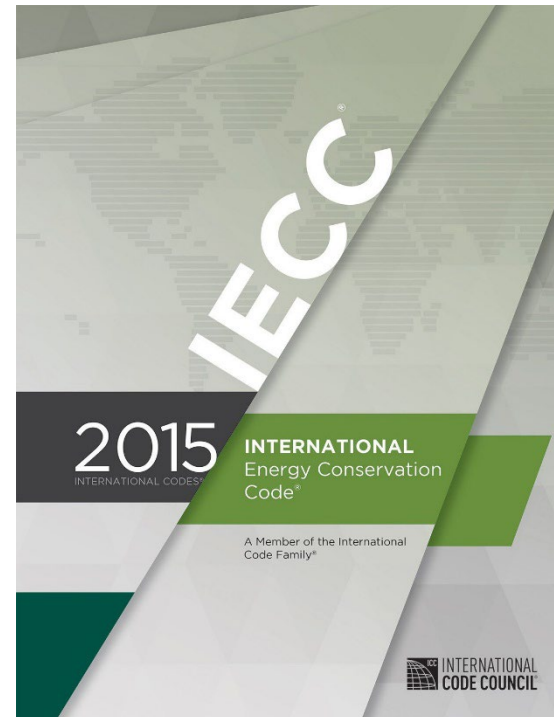
Standard administrative code language.

§3-181-7 General. IECC section C103.1 is deleted in its entirety and replaced with the following:

"103.1 General. When the requirements in this code apply to a building as specified in Section C101.4, plans, specifications or other construction documents submitted for a building, electrical or plumbing permit required by the jurisdiction shall comply with this code and shall be prepared, designed, approved and observed by a design professional. The responsible design professional shall provide on the plans a signed statement certifying that the project is in compliance with this code.

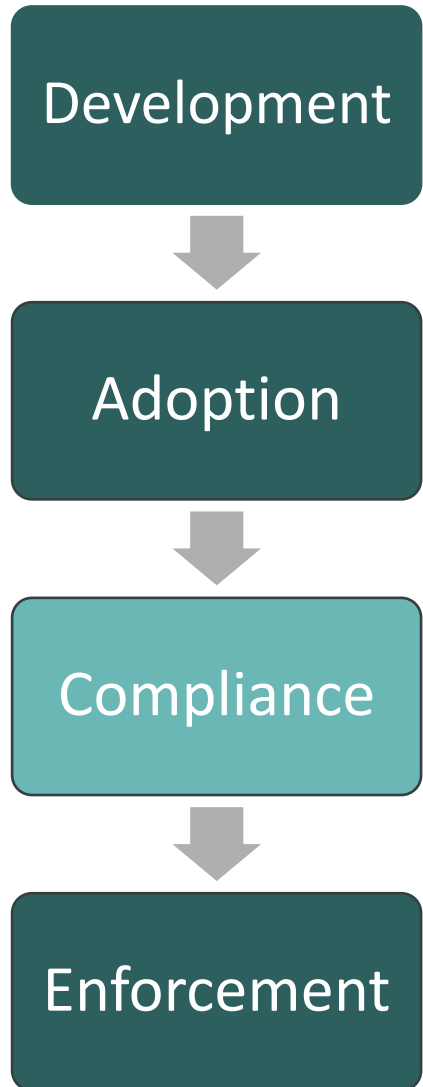
Exception: Any building, electrical or plumbing work that is not required to be prepared, designed, approved or observed by a licensed professional architect or engineer pursuant to chapter 464 Hawaii Revised Statutes." [Eff
] (Auth: HRS §107-29) (Imp: HRS §§107-24, 107-25)

The current (as of 2021) Hawaii Energy Code is based on 2015 IECC with Hawaii Amendments.



C. Energy code compliance and enforcement

Energy code compliance



Building design and construction professionals are required to comply with the energy code.

Energy codes affect design & construction



- Wall, floor, ceiling
- Doors, windows
- Heating, ventilating, & cooling systems & equipment
- Lighting systems & equipment
- Water-heating systems & equipment

How energy codes affect design & construction: walls



Example: Home builders may use 2 x 6 studs instead of 2 x 4 for walls so that higher levels of insulation can be installed to meet the energy code.



How energy codes affect design & construction: HVAC



Energy codes provide criteria for the size and efficiency of HVAC systems & equipment.

How energy codes affect design & construction: lighting



Energy codes provide criteria to support efficient lighting and controls.


How energy codes affect design & construction: hot water



- Energy codes provide criteria to efficiently heat and deliver hot water.

Demonstrating energy code compliance

Software developed by the DOE is widely used by design professionals (architects and engineers) to prove energy code compliance.



REScheck Software Version 4.6.5

Compliance Certificate

Project

Energy Code: 2015 IECC

Location: Moorestown, New Jersey

Construction Type: Single-family

Project Type: New Construction

Conditioned Floor Area: 2,503 ft2

Glazing Area: 17%

Climate Zone: 4 (5010 HDD)

Permit Date:

Permit Number:

Construction Site:

Owner/Agent:
Buidly Builderson

Designer/Contractor:
Builder's Building Plans

Compliance: Passes using UA trade-off

Compliance: 4.5% Better Than Code Maximum UA: 529 Your UA: 505 Maximum SHGC: 0.40 Your SHGC: 0.25

The % Better or Worse Than Code Index reflects how close to compliance the house is based on code trade-off rules.
It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.

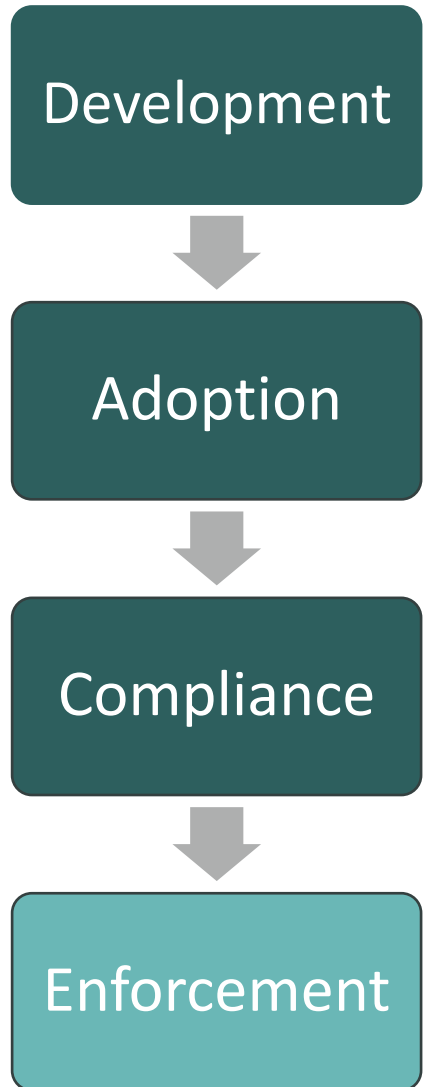
Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	U-Factor	UA
Ceiling area of home forming top of insulation envelope: Flat Ceiling or Scissor Truss	2,352	38.0	0.0	0.030	71
Wall area of home forming sides of insulation envelope: Wood Frame, 16" o.c.	631	19.0	0.0	0.060	9
Window area of home using energy efficient units: Vinyl/Fiberglass Frame: Double Pane with Low-E	367			0.290	106

SHGC: 0.25



Energy code enforcement



<https://pixabay.com/illustrations/contractor-civil-profile-leader-1623889/>

Building code officials enforce building codes, including the energy code.

Code officials



- Review design plans
- Inspect construction work
- Issue building & occupancy permits

Credits

This material was developed by the Smart Energy Design Assistance Center at the University of Illinois at Urbana-Champaign.



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<https://smartenergy.illinois.edu/bee-fundamentals/>



Activities and discussion

Intro to Energy Code Jeopardy

CODE APPLIED

100

True or false? Energy codes affect the design and construction of buildings
True

200

Energy codes and standards apply to two general types of buildings. What are they?
Residential and commercial

300

The energy code is generally administered on the _____ or _____ level (hint: geography)
State or local

400

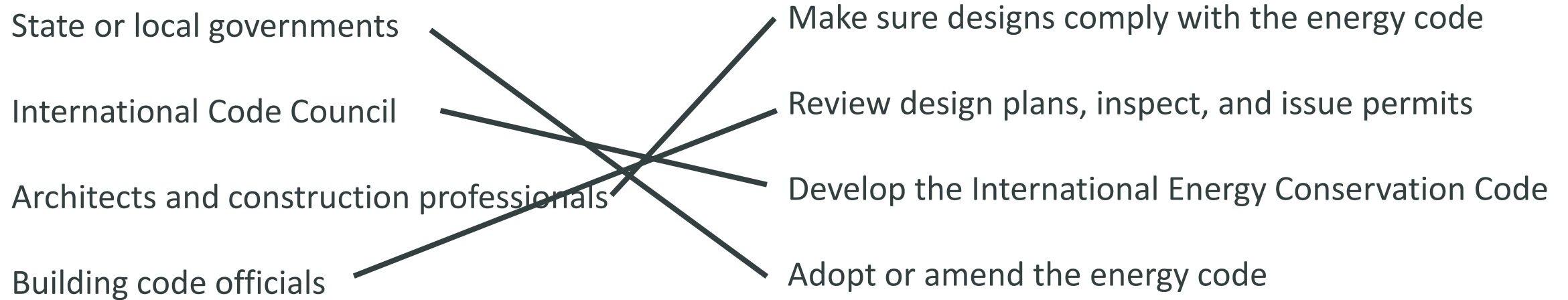
Energy codes & standards apply to both _____ construction and _____ projects
New / Renovation

500

Name at least two major roles building code professionals play
Review design plans, inspect construction work, issue permits

Energy code basics worksheet



Match the organization or group with the energy code activity they are responsible for



Syllabus Scavenger Hunt

Group 1 (Sumi) Building 160 Residential Energy Auditing

learn.smartenergy.illinois.edu

Topic	BEE Presentations	BEE Activities or Resources
Intro to Energy Audits of Existing Buildings	 Module x	 Module x
Foundations, Floor Systems		
Fenestration, Walls, Roofs, Total Envelope Calculations		
Air Infiltration/Blower Door and Duct Leakage Testing		
HVAC System Calculations, Manual J		
Ventilation Requirement Calculations		

Group discussion

- What are the greatest training needs related to energy code and energy efficiency fundamentals?
- What kinds of learning materials are most helpful?
- What are the best ways to teach these fundamentals to current and future building professionals?
- What resources would help support you as you utilize the curriculum?
- **What are the best ways to check in with you and your students?**

Evaluating the Curriculum

How well does the curriculum help students master building energy fundamentals?

Help us measure outcomes to improve the program!

3 Action Items

1. **Check in with us:** We'll schedule brief check-ins before, during, and after you teach your course.
2. **Report course metrics:** Report the number of modules used, number of students in course, etc.
3. **Help us gather information from your students:** Ask students to complete surveys to assess learning outcomes and gather feedback.

Please complete this survey

<https://forms.gle/zeinAqmHbGGXhUF66>

After attending the workshop, how likely are you to use parts of the curriculum in one or more of your courses or for on-the-job training?

	1	2	3	4	5	
Very unlikely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very likely

Name of course (if applicable)

Your answer

Anticipated number of students

Your answer



Questions?

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