



Governor's Office of Energy



Building
Energy
Education

fundamentals



ILLINOIS

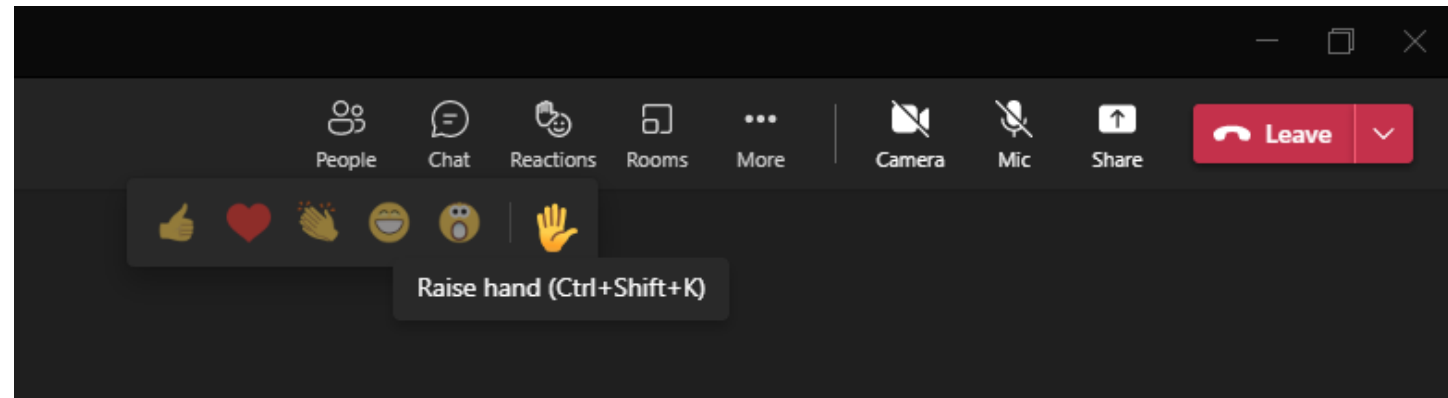
BEE Fundamentals NEVADA LAUNCH

April 20, 2022

Robin Yochum, Energy Program Manager

HOUSEKEEPING ITEMS

- Please keep yourself muted during the presentations
- You are welcome to turn your camera on
- This webinar will be recorded
- We will share links and resources in the chat window
- Use the “raise hand” function to ask a question



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TODAY'S AGENDA

- 10 - 10:15 Intro/Welcome
- 10:15 - 10:20 Welcome remarks from DOE
- 10:20 - 10:45 Review of the study and curriculum development
- 10:45 - 11:45 EE and Codes Panel
 - Yul Echo (TMCC instructor)
 - Wes Evans (TMCC instructor)
 - Valarie Evans (City of North Las Vegas)
 - Rick Van Diepen (AIA)
 - Moderated by Vanessa Robertson (Envirolution)
- 11:45 - 12 Conclusion
 - Troy Callahan (CSN instructor)
 - SEDAC



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AGENCY OVERVIEW

Mission

- to ensure the wise development of Nevada's energy resources in harmony with local economic needs and to position Nevada to lead the nation in:
 - renewable energy production
 - energy conservation
 - export of energy
 - transportation electrification



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ENERGY EFFICIENCY

**Home Energy Retrofit
Opportunity for
Seniors (HEROS)**

**Building Energy
Codes**

**Performance
Contract Audit
Assistance Program
(PCAAP)**



ENERGY EFFICIENCY

**Lightbulb Efficiency
Standards**

**Appliance Efficiency
Standards**



TRANSPORTATION ELECTRIFICATION

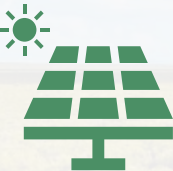
**Nevada Electric
Highway (NEH)**



RENEWABLE ENERGY

**Renewable Energy Tax
Abatements (RETA)**

**Lower Income Solar
Energy Program
(LISEP)**



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ENERGY EFFICIENCY PROGRAMS

- Home Energy Retrofit Opportunities for Seniors (HEROS) program
- International Energy Conservation Codes (IECC)
- Lightbulb Efficiency (AB 54 2019)
- Appliance Standards (AB 383 2021)



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CLIMATE GOALS & BUILDING ENERGY CODES

- According to the Nevada Climate Strategy, [energy codes are instrumental](#) in achieving Nevada's climate goals
- Energy codes are projected to save U.S. homes and businesses \$126 billion between 2012 and 2040
- 2021 International Energy Conservation Code is 10% more energy efficient than 2018



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BENEFITS OF BUILDING ENERGY CODES

- Lower energy bills for all Nevadans, including those in low- to moderate-income communities
- Healthier indoor environments
- Energy efficient homes and businesses for decades
- Assists in meeting state climate goals



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LOCAL ADOPTION

The Climate Strategy recognizes local jurisdictions are impacted more heavily than the state.

Local impacts include:

- Adoption of the full family of I-codes, not just IECC (International Residential Code - IRC, International Building Code - IBC)
- Training must occur prior to adoption
- Implementation and enforcement
- Funding required – varies by jurisdiction
- Significant staff time required



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WELCOME FROM DOE

Christopher Perry

U.S. Department of Energy (DOE)
Building Technologies Office



Governor's Office of Energy



Building
Energy
Education

fundamentals

Partnered with Nevada Governor's Office of Energy
Sponsored by DOE

April 20, 2022



SEDAC

SMART ENERGY DESIGN ASSISTANCE CENTER

Providing effective energy strategies for buildings and communities

Who We Are

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

Our 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**



What is BEE Fundamentals?

This program 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.



Program Q & A

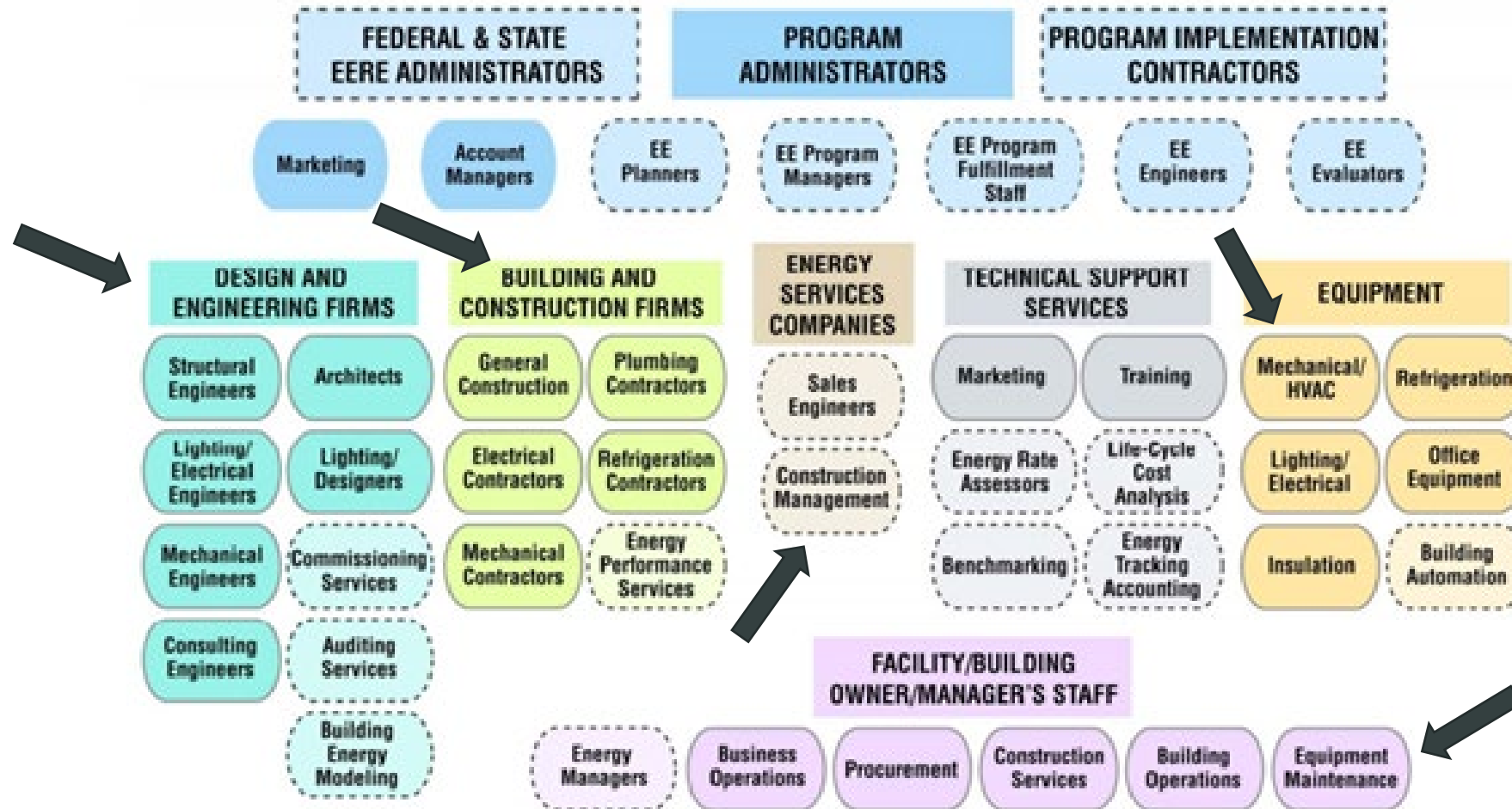
- . Who is the **target audience** for the energy code training program?
community college instructors & students + entry-level building design & construction professionals
- . Is the energy code training program a "**stand alone**" program that prepares students for a **specific job and/or to sit for a certification exam**?
incorporated into existing courses/programs to gain fundamental knowledge required for exams

Program Q & A

- . **How long** is the energy code training program?
Flexible, 15 topics with multiple subtopics with multiple 15-min contents
- . What **background knowledge** is required for someone to teach this topic? I am trying to determine if we have that knowledge on our campus.
Building design and construction, Architecture, Mechanical engineering, Energy Management, Sustainability, HVAC trades & related fields.

Careers in Energy Efficiency

There are many different energy efficiency jobs.



<https://emp.lbl.gov/publications/energy-efficiency-services-sector>

Careers in Energy Efficiency

Energy efficiency jobs span a range of skills.



Building Related Jobs:

- ✓ Design
- ✓ Construction
- ✓ Operation



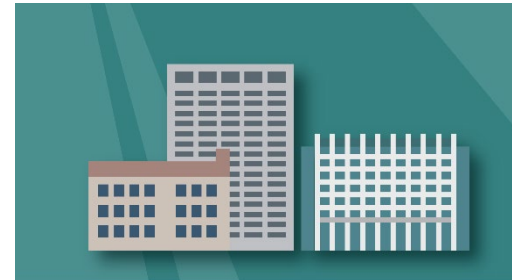
Policy & Planning

- ✓ Marketing
- ✓ Proposal Writing
- ✓ Research



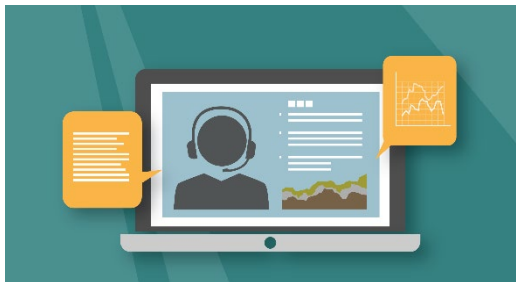
Analysis & Computation:

- ✓ Calculate Savings
- ✓ Manage Data
- ✓ Generate Reports



Financial:

- ✓ Sales & Cashflow Analysis
- ✓ Project Financing
- ✓ Project Management



Customer Service & Training

- ✓ Sell Products and Services
- ✓ Quality Control
- ✓ Teach Students

Careers in Energy Efficiency

Building related jobs address energy efficiency.



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



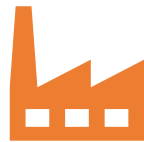
Building Operators

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

Careers in Energy Efficiency

There are many non-construction, technical energy efficiency jobs, too.

Industrial: Factories and manufacturing have big energy efficiency opportunities



Program Implementation: Identify opportunities for clients to take advantage of utility energy efficiency programs



Product Development: Engineers and designers develop products to support energy efficiency in other sectors



Public Works: Reduce the energy use of vital public services such as water treatment and public transportation.



Careers in Energy Efficiency

There are many non-construction, technical energy efficiency jobs, too.

Sales and marketing:
Sell energy efficiency products and services



Program management:
Help manage utility energy efficiency programs



Accounting: Help finance and facilitate energy efficiency projects



Policy making: Help develop the policies that prioritize energy efficiency



Educating: Educate people about the benefits of energy efficiency



Code Professional Career

Figure 2: Plans to Leave the Building Regulatory Profession

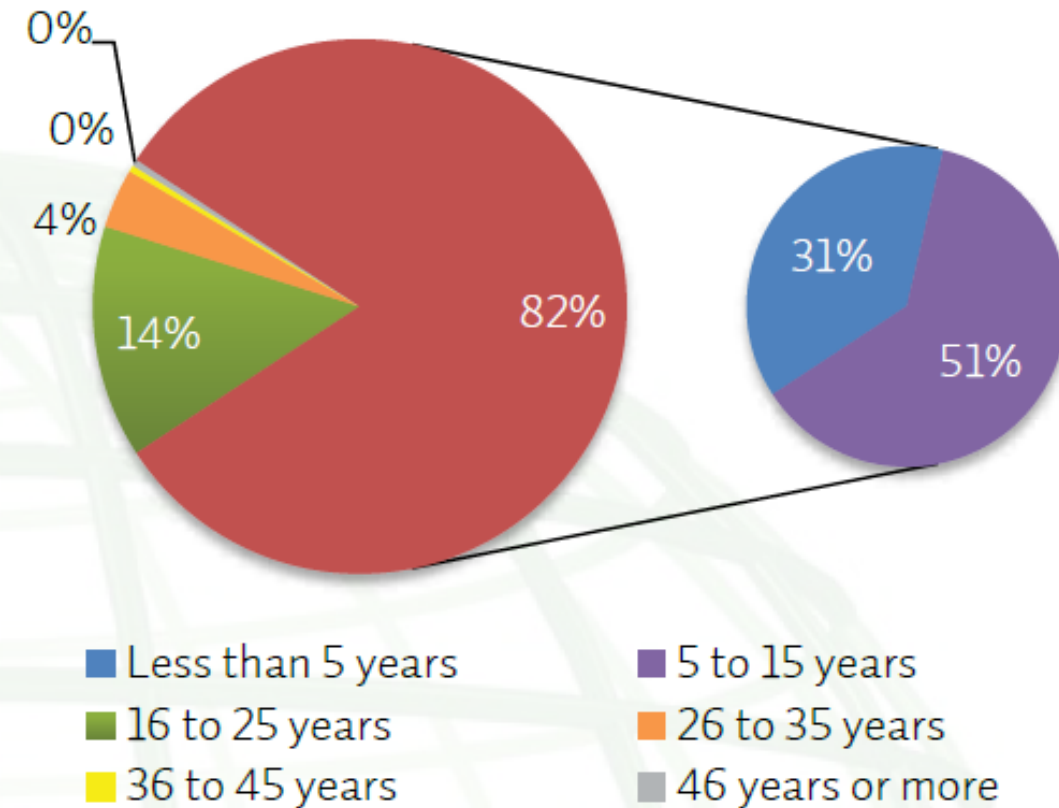
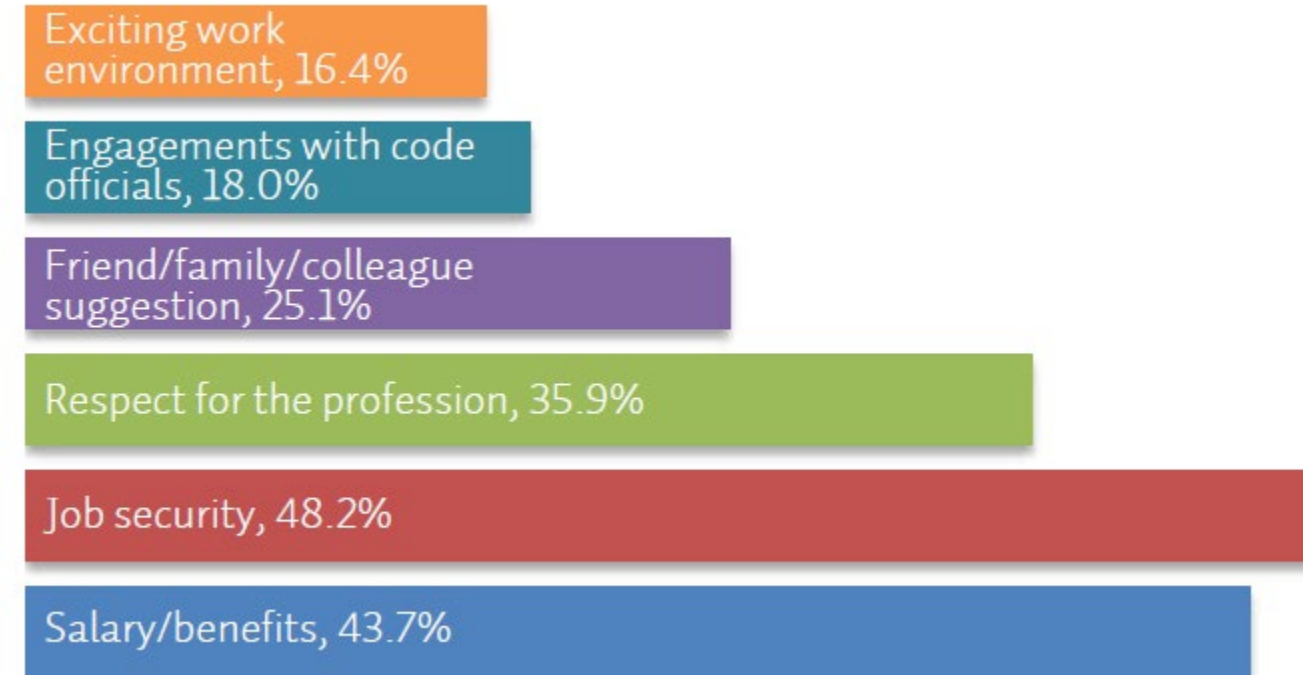


Figure 10: Reasons for Pursuing Career as Code Professional



Code Professional Career

“... far more rewarding, as you **maintain vigilance** over all structures built in your jurisdiction to ensure they meet the minimum standards of the laws and codes.”

“I believe that my 25 years in the field of commercial construction as an **apprentice, journeyman, foreman and supervisor** served me well when I made the decision to enter the inspection field.”

“**Extremely rewarding**, always helping people, always learning, never a dull moment, always in demand.”

“Get all of the vocational training you can, and work in the building trades field, so you have a **good understanding** of how a structure should go together. Work for a good, reputable contractor for at least two years and **train, train, train.**”

Why BEE Fundamentals?

“We’re going to keep struggling with code compliance **until energy code training permeates the building trades.**”

- IL Code Official

“We offer basic, introductory exploration of the topic...it would be great to **focus more on the IECC and how it relates**”

- IL Instructor

“I don’t just keep using the same book over and over...I like to keep [my students] apprised of **what’s going on in the world today**”

- NV Instructor

“Most people tend to learn better when they are able to have **hands-on experience or see live examples** instead of only reading about it.”

- HI Code Consultant

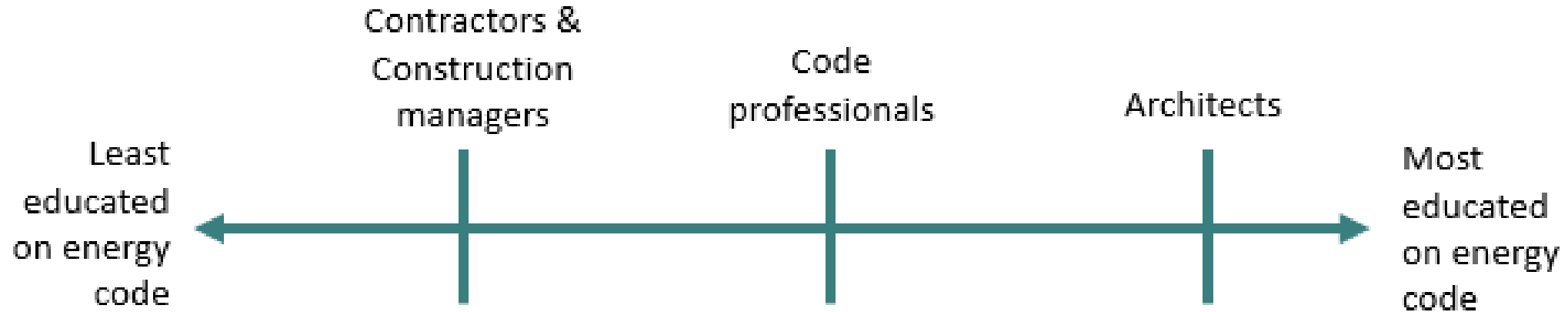
What We've Learned: Training Needs Assessment

Methods

- Literature review & feedback from code officials, instructors in IL, NV and HI.
- Surveyed about 60 community college programs & curricula
- Reviewed literature on barriers & best practices

Results

Interviewees agreed that there is a need for more energy code/energy efficiency training in the building trades



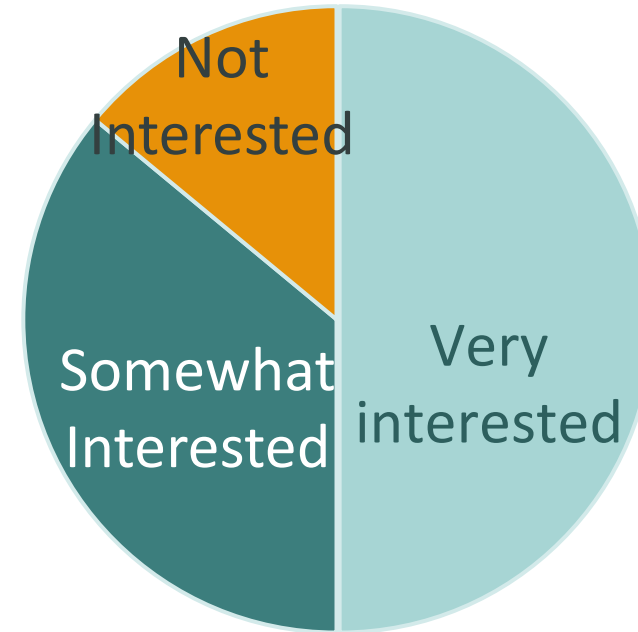
“We’re going to keep struggling with code compliance until energy code training permeates the building trades.”

- IL Code Official

Results

Strong Interest in additional training

86% of instructors are interested in enhancing energy and energy code education in their programs.



“We offer basic, introductory exploration of the topic...it would be great to focus more on the IECC and how it relates”

- IL Instructor

Results

What content should be taught?

- Energy code/energy efficiency **basics**
- **Whole-building** approach
- Information about **new practices, technologies**
- Information about **careers** in codes, energy efficiency

“I don’t just keep using the same book over and over...I like to keep [my students] apprised of what’s going on in the world today”

- NV Instructor

Results

How should the content be taught?

Engaging teaching methods

- Short videos
- Demonstrations
- Building science basics
- Self-directed learning activities
- Experiential learning

Not engaging teaching methods

- Lectures
- Rote memorization

“Most people tend to learn better when they are able to have hands-on experience or see live examples instead of only reading about it.”

- HI Code Consultant

Results

Is it feasible to integrate new content into existing curriculum?

Feasible

- Small, add-on elements
- Resources to reinforce existing content

Not feasible

- Major changes, additions
- Stand-alone courses

Barriers to making major changes:

- Class time
- Established learning objectives
- Administrative approval
- Advisory committee approval
- Transfer requirements

“For anything you add, something has to be removed.”

- IL Instructor

What We've Developed:

Building Energy Education (BEE)

Fundamentals

BEE Fundamentals Program Webpage

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



About ▾

Programs ▾

Who We Serve ▾

Resources ▾

Blog

Contact



Building Energy Education Fundamentals

Home > Energy Code Training > Building Energy Education Fundamentals



Building
Energy
Education

fundamentals

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



Instructor Toolkit

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

Instructor Toolkit:
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?



INTRO MODULES



Community College Energy Code Training Program: ...



1. Energy Efficiency Careers & Pathways



3. Introduction to Energy Codes & Standards



4. Navigating Energy Codes & Standards



1. Accessing the Codes: Presentation
2. Looking up Requirements: Presentation
3. Energy Code Compliance Paths: Presentation
4. The Approval and Permit Process: Presentation
5. Combined presentation, in-class exercise, review worksheet, and Jeopardy activity

Moodle

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



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](#)

1. Energy Efficiency Careers & Pathways

Home > Courses > Intro Modules > 1. Energy Efficiency Careers

Turn editing on

1. Energy Efficiency Careers & Pathways

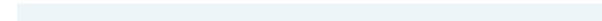
Learn about careers that engage with energy efficiency and the energy code.



1.1 Careers in Energy Efficiency

Objective: Identify common energy efficiency careers and job titles, describe what people do in these careers, and what motivates them.

Topic's progress



1.2 Pathways to Energy Efficiency Careers

Objective: Describe potential career pathways to common energy efficiency jobs

Topic's progress



1.3 Code Official Careers

Objective: Identify building code official careers and describe pathways to these careers.

Topic's progress



Activities

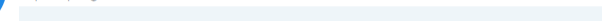
Want to teach all chapters in this module at once? Use our combined presentation. Assess learning on all chapters with this review activity and worksheet.

Topic's progress



Quiz & Survey

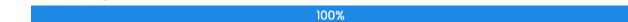
Topic's progress



Completion Certificate

Get your completion certificate for this module.

Topic's progress



Restricted Not available unless: You do **not** belong to CC Instructors

Moodle: How to Navigate



BEE Fundamentals Webinars & Workshop

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

PROGRAM LAUNCH

HAWAII LAUNCH WEBINARS

Part 1: April 7, 2022, 12:00-1:30 pm HST

[Register here](#)

Part 2: April 14, 2022, 12:00-1:30 pm HST

[Register here](#)

Part 3: April 21, 2022, 12:00-1:30 pm HST

[Register here](#)

Hawaii Launch Part 1 Agenda



Hawaii Launch Part 2 Agenda



Hawaii Launch Part 3 Agenda



NEVADA LAUNCH WEBINAR

April 20, 2022 from 10am-12pm PST

RSVP via email: info@energy.nv.gov

Nevada Launch Agenda



ILLINOIS LAUNCH WEBINAR

April 22, 2022 from 2-4pm CST

[Register here](#)

Illinois Launch Agenda



TRAIN-THE-TRAINER WORKSHOP

(for All States)

April 29, 2022

2:00-4:00 pm CST (12 – 2pm PST, 9 – 11am HST)

[Register here](#)

Train the Trainer Workshop Agenda





Questions?

sumihan@illinois.edu
217-300-1820

PANEL DISCUSSION

Energy Efficiency, Building Energy Codes, Building Design and Workforce Development

*Moderated by: Vanessa
Robertson*



Governor's Office of Energy

PANEL DISCUSSION



Yul Echo, TMCC HVAC
Instructor



Valarie Evans, City of North
Las Vegas Code Official



Governor's Office of Energy

PANEL DISCUSSION



Rick Van Diepen, architect



Wes Evans, TMCC HVAC Instructor



Governor's Office of Energy

THANK YOU TO OUR SPEAKERS!



Vanessa
Robertson,
Envirolution
Co-Executive
Director



Sumi Han,
SEDAC
Assistant
Director of
Operations



Wes Evans,
TMCC HVAC
Instructor



Rick Van Diepen,
architect



Yul Echo, TMCC
HVAC Instructor



Valarie Evans, City of
North Las Vegas Code
Official



Troy Callahan, CSN
Construction
Management Instructor



Governor's Office of Energy



TRAIN-THE-TRAINER VIRTUAL WORKSHOP

APRIL 29, 2022 | 2:00 PM - 4:00 PM CST | REGISTRATION REQUIRED

REGISTER

ONLINE AT: smartenergy.illinois.edu/bee_fundamentals

The University of Illinois Smart Energy Design Assistance Center (SEDAC) developed 15 energy efficiency and energy code modules for use in community college and building science training programs. The BEE Fundamentals program provides community college faculty and instructors with free introductory energy code course materials including presentations, worksheets, in-class activities, and videos.

Presented by:



Contact Information:

Sumi Han (SEDAC)
sumihan@illinois.edu

Sponsored by:

