BEE Fundamentals NEVADA LAUNCH

April 20, 2022

Robin Yochum, Energy Program Manager
• 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
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
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
ENERGY EFFICIENCY
Home Energy Retrofit Opportunity for Seniors (HEROS)
Building Energy Codes
Performance Contract Audit Assistance Program (PCAAPP)

Appliance Efficiency Standards
Lightbulb Efficiency Standards

TRANSPORTATION ELECTRIFICATION
Nevada Electric Highway (NEH)

RENEWABLE ENERGY
Renewable Energy Tax Abatements (RETA)
Lower Income Solar Energy Program (LISEP)
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)
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.
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
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
WELCOME FROM DOE

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

Governor’s Office of Energy
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

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

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

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
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.

What is BEE Fundamentals?
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
• **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
Energy efficiency jobs span a range of skills.

**Building Related Jobs:**
- Design
- Construction
- Operation

**Analysis & Computation:**
- Calculate Savings
- Manage Data
- Generate Reports

**Customer Service & Training**
- Sell Products and Services
- Quality Control
- Teach Students

**Policy & Planning**
- Marketing
- Proposal Writing
- Research

**Financial:**
- Sales & Cashflow Analysis
- Project Financing
- Project Management
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

https://unsplash.com/: clockwise from upper left: Ryan Ancill, Gregson Joralemon, Emmanuel Ikwuegbu, Christopher Burns
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.
There are many non-construction, technical energy efficiency jobs, too.

**Sales and marketing:** Sell energy efficiency products and services

**Accounting:** Help finance and facilitate energy efficiency projects

**Program management:** Help manage utility energy efficiency programs

**Policy making:** Help develop the policies that prioritize energy efficiency

**Educating:** Educate people about the benefits of energy efficiency
Figure 2: Plans to Leave the Building Regulatory Profession

- Less than 5 years: 4%
- 5 to 15 years: 14%
- 16 to 25 years: 31%
- 26 to 35 years: 51%
- 36 to 45 years: 82%

Figure 10: Reasons for Pursuing Career as Code Professional

- Exciting work environment, 16.4%
- Engagements with code officials, 18.0%
- Friend/family/colleague suggestion, 25.1%
- Respect for the profession, 35.9%
- Job security, 48.2%
- Salary/benefits, 43.7%
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.”

“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] appraised 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
• 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
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
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] appraised of what’s going on in the world today”

- NV Instructor
## Results

### How should the content be taught?

<table>
<thead>
<tr>
<th>Engaging teaching methods</th>
<th>Not engaging teaching methods</th>
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<tbody>
<tr>
<td>• Short videos</td>
<td>• Lectures</td>
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<td>• Demonstrations</td>
<td>• Route memorization</td>
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<td>• Building science basics</td>
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<tr>
<td>• Self-directed learning activities</td>
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<td>• Experiential learning</td>
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“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?

<table>
<thead>
<tr>
<th>Feasible</th>
<th>Not feasible</th>
<th>Barriers to making major changes:</th>
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<tbody>
<tr>
<td>Small, add-on elements</td>
<td>Major changes, additions</td>
<td>Class time</td>
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<tr>
<td>Resources to reinforce existing content</td>
<td>Stand-alone courses</td>
<td>Established learning objectives</td>
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<td>Administrative approval</td>
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<td>Advisory committee approval</td>
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<td>Transfer requirements</td>
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“For anything you add, something has to be removed.” - IL Instructor
What We’ve Developed:
Building Energy Education (BEE) 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

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

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
Access our Modules! Login to our Moodle Site

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

Moodle

1. Energy Efficiency Careers & Pathways

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.

1.2 Pathways to Energy Efficiency Careers
Objective: Describe potential career pathways to common energy efficiency jobs.

1.3 Code Official Careers
Objective: Identify building code official careers and describe pathways to these careers.

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.

Quiz & Survey

Completion Certificate
Certified: 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

NEVADA LAUNCH WEBINAR

April 20, 2022 from 10am-12pm PST
RSVP via email: info@energy.nv.gov

ILLINOIS LAUNCH WEBINAR

April 22, 2022 from 2-4pm CST
Register here

TRAIN-THE-TRAINER WORKSHOP

(for All States)

April 29, 2022
2:00-4:00 pm CST (12 – 2pm PST, 9 – 11am HST)
Register here

Hawaii Launch Part 1 Agenda
Hawaii Launch Part 2 Agenda
Hawaii Launch Part 3 Agenda

Nevada Launch Agenda
Illinois Launch Agenda

Train the Trainer Workshop Agenda
Questions?

sumihan@illinois.edu
217-300-1820
Energy Efficiency, Building Energy Codes, Building Design and Workforce Development

Moderated by: Vanessa Robertson

gov.nv.gov/environlution

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
Wes Evans, TMCC HVAC Instructor

Rick Van Diepen, architect
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.