



02/12/2021

Job creation and workforce development for building renovation

US-EU exchange on energy efficiency in buildings and housing





Housekeeping

The screenshot shows a Webex meeting window. The main content area displays a presentation slide with the following text:

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Job creation and workforce development for building renovation

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BPPIE

The side panel on the right contains the following items:

- Participants (1)
- Slido
- Chat
- Q & A

Red arrows point from the text on the right to the Slido and Q & A items in the side panel.

- Use Slido to answer polling questions
- Submit your text questions and comments using the Q&A panel
- Today's presentation is being recorded and will be provided by email along with the slide deck.





AGENDA

Session 1: The network of energy efficiency jobs

- **More and better jobs! Energy Efficiency as jobs multiplier:**
Gunde Ogdaard, Secretary General, BAT-Kartellet
- **Green HVACR Career Pathways:**
John Steele, Senior Director, Government Relations, Johnson Controls
- Q&A

Session 2: Energy efficiency workforce development

- **Skills in construction – energy efficiency and beyond:**
Roman Horváth, Policy Officer – Sustainable Industrial Policy and Construction, DG Internal Market, Industry, Entrepreneurship and SMEs, European Commission
- **Green Buildings Career Map:**
Madeline Salzman, Workforce Advisor, Office of Energy Efficiency & Renewable Energy, US Department of Energy
- Q&A

Closing remarks: **Lotte Schlegel**, Executive Director, Institute for Market Transformation





SESSION 1

The network of energy efficiency jobs



Gunde Ogdaard

Secretary General,
BAT-Kartellet



John Steele

Senior Director,
Government Relations,
Johnson Controls





SESSION 1



Gunde Ogdaard

Secretary General,
BAT-Kartellet



Job creation and workforce development for building renovation



SESSION 1



John Steele

Senior Director,
Government Relations,
Johnson Controls



Job creation and workforce development for building renovation



US-EU Exchange Webinar: Job Creation and Workforce Development

December 2, 2021

The power behind **your mission**



Green HVACR Career Pathways

Providing a bridge to the future

Johnson Controls is not only committed to improving student achievement through better physical environments, we also believe in educating and inspiring inmates to help create brighter futures.





Potential DOC Student Challenges

- Lack of Knowledge regarding Career Paths
- Lack of Career Focused Learning Opportunities
- GED, Reading, and Math Requirements
- Potential Health and Rehab Challenges
- 95% released – how to find jobs without skills?

DOC Facility Maintenance Challenges

- Workforce Engagement and Skill Gaps
- Staff Retirements and Turnover
- Aging Facilities and Potential Risks
- Deferred Maintenance Backlogs
- Facility HVACR Control Problems

Potential Career Paths



Building Maintenance Specialist

- HVAC Maintenance
- Plumbing repairs
- Electrical repairs
- Green energy options



Green HVACR Technician/Mechanic

- Digital controls
- Solar PV energy
- Troubleshooting
- HVACR repairs



Facility Maintenance Electrician

- Electrical diagnostics
- Equipment controls
- Troubleshooting
- Lighting retrofits



Building Automation Systems Technician

- Facility operations
- Control strategies
- Program controllers
- Re-commissioning

Johnson Controls Institute Provides:

- 01 | Assessment of current Vocational Programs and Success Rates for local Best Practices
- 02 | Job Market Research to help customize HVACR Curriculum and Certifications
- 03 | Collaborate with District staff to assess skills/interests to help identify students best suited for program success
- 04 | “Train the Trainer” programs to assist District instructors, assistants, and students with Lab Equipment, Curriculum, Job-specific courses, and Performance Support tools
- 05 | Assist with designing and deploying onsite Mentoring, Apprenticeships, and Certification programs to apply and document new skills
- 06 | Green HVACR training materials for 20 students (Johnson Controls and other books, workbooks, videos, CDs, and simulator recommendations)
- 07 | Collaborates with District College/Career Readiness Specialists

Recidivism reduced

Johnson Controls and Virginia DoC partnered on our Green HVAC Program, helping reduce VA 3-year recidivism to 22.8%.

National average returning to prison = 50% (Bureau of Justice Statistics)

Money Saved

Virginia only needed 5 graduates to remain out of prison for 3 years to pay for the entire program.

Currently, 67 of our 71 Virginia graduates are not in prison, resulting in over \$2M of just housing savings each year.

71

VA-DoC JCI HVACR program graduates released since 2012 startup

67 graduates did not return to prison

54

LA-DoC JCI HVACR program graduates released since 2015 startup

53 graduates did not return to prison

EXIT



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Questions?



SESSION 1

Q&A



Job creation and workforce development for building renovation





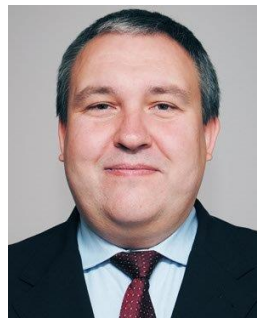
Session 2

Energy efficiency workforce development



Madeline Salzman

Workforce Advisor,
Office of Energy
Efficiency & Renewable
Energy,
US Department of
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Roman Horváth

Policy Officer – Sustainable
Industrial Policy and
Construction,
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European Commission





SESSION 2



Roman Horváth

Policy Officer – Sustainable Industrial
Policy and Construction,
DG Internal Market, Industry,
Entrepreneurship and SMEs,
European Commission





Skills in Construction

Energy Efficiency and Beyond

Roman Horváth

H.1 Construction

*Directorate General for Internal Market,
Industry, Entrepreneurship and SMEs*

European Commission



Construction

- One of the biggest parts of the EU economy (growth and jobs)
- But also consumption of raw materials, emissions, waste
- EU global climate goals – 55% reduction in GHG emissions 1990 - 2030, climate neutral by 2050
- Nearly zero-energy new buildings; Renovation Wave - to double annual energy renovation rates of existing buildings in the next 10 years
- Mastering energy efficiency, adequate materials and technologies – “new normal”
- Lack of workers, skills gaps and mismatches

Cooperation - European Commission – EU Member States

Commission President von der Leyen:

"The best investment in our future is the investment in our people. Skills and education drive Europe's competitiveness and innovation. But Europe is not yet fully ready. I will ensure that we use all the tools and funds at our disposal to redress this balance."

- Commission – targeted funding, supporting EU-wide partnerships and good practice sharing
- Support of vocational education and training, in particular apprenticeships, is crucial to facilitate smooth school-to-work transitions and to increase the availability of skilled workforce.

EU funding of skills at national level

Recovery and Resilience Facility (€723.8 billion)

- national plans, Reskill and upskill flagship (one of seven), green and digital skills

https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en#national-recovery-and-resilience-plans

Cohesion Funds 2021 – 2027 (€392 billion)

https://ec.europa.eu/regional_policy/en/2021_2027/

<https://ec.europa.eu/esf/main.jsp?catId=62&langId=en>

Projects

Blueprint for Sectoral Cooperation on Skills – Construction

<http://constructionblueprint.eu/>

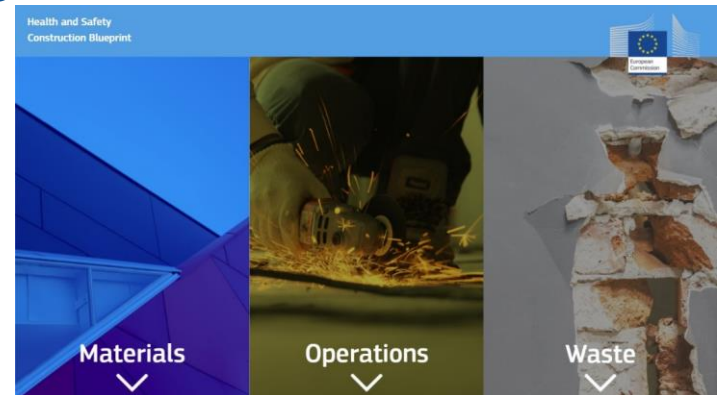


Establishing a new Strategy on Construction Skills in Europe

- a 4-year long stakeholders-led project (2019-2022)
- a sectoral strategy for skills (digitalisation, energy efficiency, circularity)

Blueprint – supporting measures

- occupational health and safety
- *focus on construction and insulation materials, technologies and waste*
- *PDFs & Platform (EN, ES, FR, IT, DE, PL)*



<https://constructionblueprint.eu/hs-blueprint/>

Good practices and innovative initiatives:



The Project

New Skills

Observatory

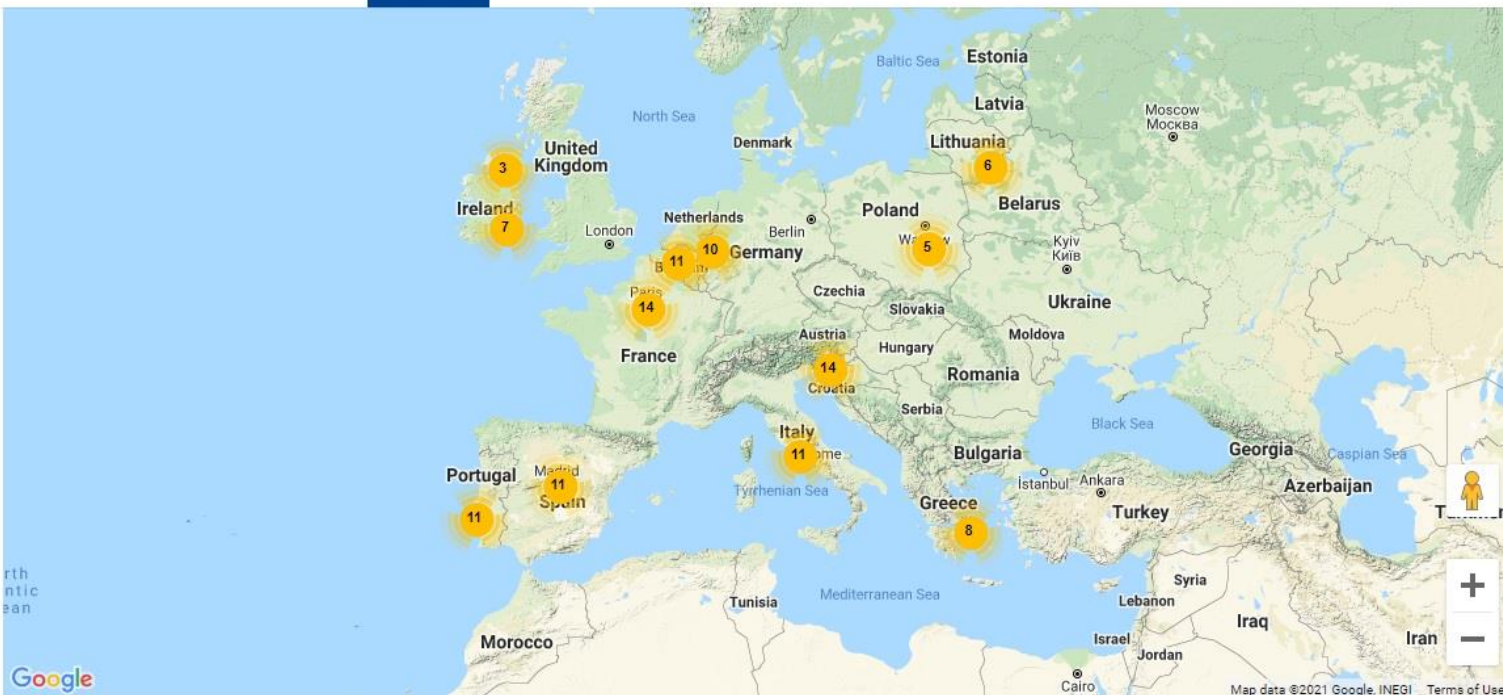
Profiles and Qualifications

Outreach Campaigns

Sectoral Skills Alliance

News

Contact



Digitalization



Energy Efficiency



Facilitation of the mobility in Europe



Health and Safety



Promotion of the attractiveness of the Construction Industry



Other

During the last decade there was around 200 projects supported at EU-level focusing on skills development in the construction sector.

BUILD UP portal (energy efficiency)

<http://www.buildup.eu/en/skills/about-build-skills>

Partnerships and good practice sharing

European Alliance for Apprenticeships (2013)

- the construction sector (2015)

- more than 50 construction pledges (supply, image, quality, mobility)
- Monitoring & Insights into VET in construction (2017)

http://ec.europa.eu/growth/sectors/construction/apprenticeships_en

Pact for Skills (2020)

- large-scale partnerships, to pool expertise and resources
- concrete actions of stakeholders to upskill and reskill workforce

<https://ec.europa.eu/social/main.jsp?catId=1517&langId=en>

Transition Pathway

- to identify and co-design the path forward for a greener, more digital and resilient construction ecosystem

https://ec.europa.eu/growth/news/launch-high-level-construction-forum-2021-09-28_en

European Construction Sector Observatory

- 2015 – the launch of the Observatory
- Data gathering, analyses/interpretation, dissemination – data comparable across the EU
- Country fact sheets, Policy fact sheets, Analytical and Trend reports
- https://ec.europa.eu/growth/sectors/construction/observatory_en
- **Analytical Report (2020):**
Improving the human capital basis





Thank you for your attention
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SESSION 2



Madeline Salzman

Workforce Advisor,
Office of Energy Efficiency &
Renewable Energy,
US Department of Energy



Job creation and workforce development for building renovation

U.S. DEPARTMENT OF
ENERGY

Office of
**ENERGY EFFICIENCY &
RENEWABLE ENERGY**

Building the U.S. Green Building Workforce

Madeline Salzman

Management & Programs Analyst, Building Technologies Office

December 2021



Office of Energy Efficiency & Renewable Energy on Workforce

Clean Energy Workforce Vision:

*The United States has a **nationally-representative** workforce of **sufficient size, skill, and compensation** to carry out an equitable transition of America's energy infrastructure to achieve net-zero greenhouse gas emissions no later than 2050.*

Goal of Efforts:

To support this vision, EERE will work to increase awareness of the clean energy workforce, support strong skills development among those that make clean energy deployment possible, streamline pathways for new people to enter the clean energy workforce, and support action that increases growth and stability of clean energy sectors.

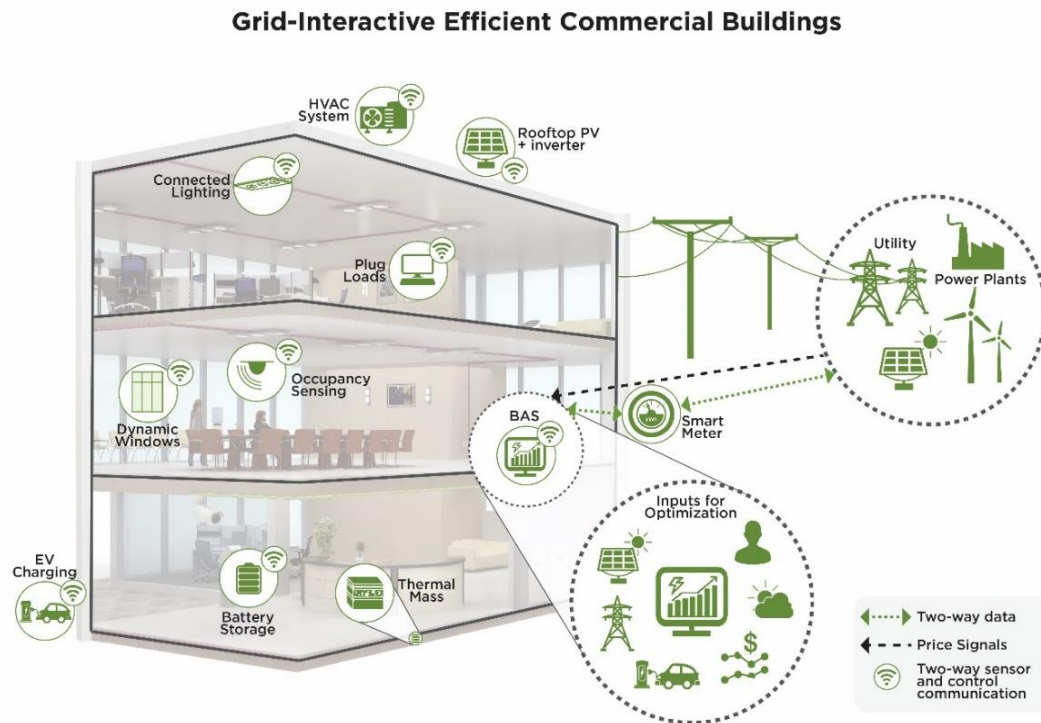


[Office of Energy Efficiency & Renewable Energy](#) » [About the Office of Energy Efficiency and Renewable Energy](#)

EERE's mission is to accelerate the research, development, demonstration, and deployment of technologies and solutions to equitably transition America to net-zero greenhouse gas emissions economy-wide by no later than 2050, and ensure the clean energy economy benefits all Americans, creating good paying jobs for the American people—especially workers and communities impacted by the energy transition and those historically underserved by the energy system and overburdened by pollution.

The Future of Buildings

- ▶ **More *efficient***
 - » Higher performance, better indoor air quality and moisture management, reduced carbon emissions
- ▶ **More *technologically advanced***
 - » Integrated comfort & fresh air systems, solar and vehicle charging, more sensors & controls, cybersecurity systems
- ▶ **More *intelligent***
 - » Responsive to occupant needs to balance energy use, costs, and comfort



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Who is the Building Efficiency Workforce?

Efficient Building Technology –

Development
t



Research &
Manufacturing

Design



Architecture &
Engineering

Deployment
t



Construction &
Operations

Diffusion



Services &
Programs

2.3+ Million Workers in Across these Industries in Efficiency Alone

Status of the US Building Efficiency Workforce



Existing Workforce Challenges: Low/Negative Perception

Lacking Interest and Awareness of Careers Among Young People



71% of students are “**definitely**” or “**probably not**” interested in HVAC careers

Source: Electric & Gas Industries Association (2018)

Women and Black Americans Are Underrepresented in Workforce



Women make up 47% of the U.S. workforce but **only 25%** of the efficiency workforce. Black Americans make up 12% of the U.S. workforce but **only 8%** of the efficiency workforce.

Source: U.S. Energy and Employment Report (2020)

Lacking Identity Within Building Efficiency Workforce



Most efficiency professionals **identify as other workforces** – construction, manufacturing, business services, etc.

Source: National Renewable Energy Laboratory (2020)

Existing Workforce Challenges: Confusing Career Pathways

Credentials are Fragmented and Nontransparent



It is not often clear which combination of training, credentials, and field experience will **give workers and professionals the skills they need.**

Source: National Renewable Energy Laboratory (2020)

Sustainability Trainings are Often Elective Rather Than Foundational



Almost 75% of Solar Decathlon professors say **no high-performance/sustainable building courses are required** for students to graduate.

Source: National Renewable Energy Laboratory (2020)

More Extreme Hiring Difficulties Among Efficiency Employers



80-90% of efficiency employers report hiring difficulty for construction-related efficiency jobs, **higher than hiring difficulties among non-efficiency employers.**

Source: U.S. Energy and Employment Report (2020)

Existing Workforce Challenges: Lacking Skills for Quality Install

Limited Adoption of Digital Tools to Streamline Processes



Construction sector productivity **lags the rest of the economy** and could benefit from digitization.

Source: McKinsey & Company (2017)

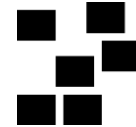
Sustainability & Building Science Content is Often Ad Hoc, Not Standardized



50%+ of Solar Decathlon professors say there are **not sufficient teaching materials** available to teach students high-performance building topics.

Source: National Renewable Energy Laboratory (2020)

Improper Installation Leads to Lacking Trust in Efficiency Technology



Without proper installation and maintenance, buildings can often **waste up to 30% of energy**.

Source: Pacific Northwest National Laboratory (2015)

Training Doesn't Make A Workforce; Demand Does

Supply of Skilled Green Buildings Workforce

- ✓ Identification of best practices
- ✓ Job task analyses
- ✓ Industry-recognized credentials
- ✓ On-the-job training & apprenticeship
- ✓ Continuing education units
- ✓ Awareness of job opportunities & career pathways
- ✓ Wrap-around services for disadvantaged prospective workers

Demand for Skilled Green Buildings Workforce

- ✓ Building energy code adoption & enforcement
- ✓ Building energy disclosure policies & performance standards
- ✓ Rebates, incentives, & building efficiency grants
- ✓ Low-cost financing & “one-stop-shop” building efficiency solutions
- ✓ Adoption of labor standards and project labor agreements
- ✓ Economies of scale & aggregated demand

**MARKET
PULL**

Overview of BTO's Workforce Development Initiatives



Strategy to Address Challenges

Goal: Ensure career pathways for a diverse and qualified building efficiency workforce that enable high performance buildings nationwide.

Early Career Exposure & Education

Apprenticeships & On-The-Job Training

Mid- and Late-Career Workers

Negative Perception

Confusing Pathways

Poor Quality Installation

Lacking Market Stability

Build Interest

- » Showcase careers in building efficiency as welcoming, impactful, and rewarding.

Streamline Paths

- » Clarify pathways from education and training to entry-level and long-term careers.

Improve Skills

- » Enhance continuing education. Include building science competencies in existing training pathways.

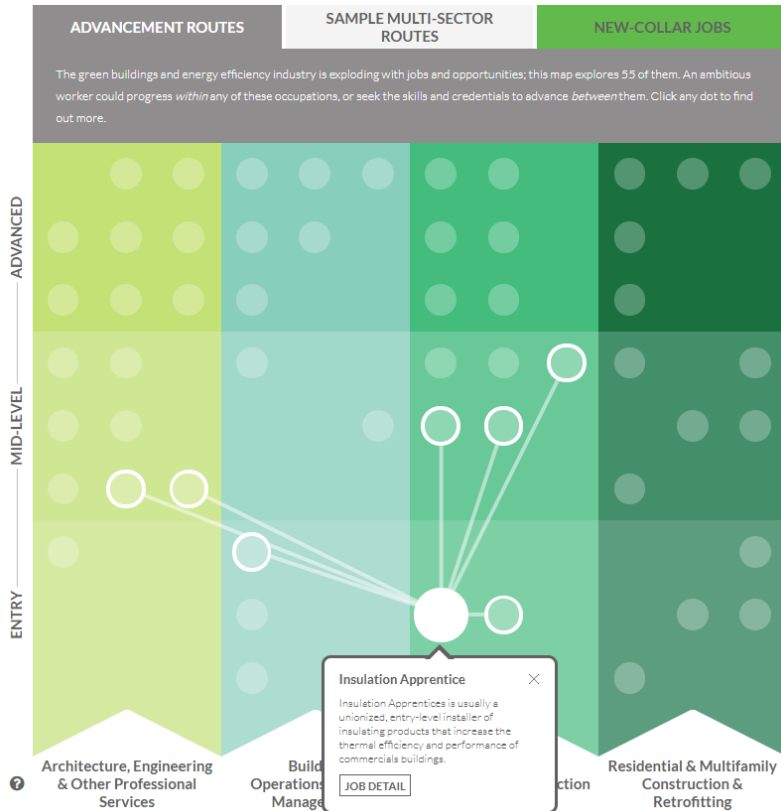
Support Demand

- » Support durable market demand growth for skilled workers, including by showcasing value of green building skills.

\$15M in Awards to Support Green Buildings Workforce

Resource Development & Integration Key Audiences	Projects
<p>High School Students, Community College Students, & New Entrants to Green Buildings Careers</p>	<ul style="list-style-type: none"> • Green Buildings Career Map (<i>Interstate Renewable Energy Council</i>) • Green Buildings 101 Content & Drop In Modules (<i>Confluence Communication</i>) • Training Platform on Modular Home Building Construction (<i>Momentum Innovation Group</i>) • Residential HVAC Maintenance Technician Training on Heat Pumps (<i>Frontier Energy & ICAST</i>) • Building Energy Controls Apprenticeship Program (<i>Lane Community College</i>)
<p>Architects, Engineers, & Architectural Engineering Students</p>	<ul style="list-style-type: none"> • Consortium on Building Energy Modeling Education for Collegiate Engineers (<i>Pennsylvania State University & Slipstream</i>) • Continuing Education on Architectural Solar (<i>Architectural Solar Association</i>)
<p>Commercial Building Operators and Facility Managers</p>	<ul style="list-style-type: none"> • Sensors & Controls Education for Public Building Operators in Rural Alaska (<i>Alaska Housing Finance Corporation</i>) • Online Learning Platform for Facility Managers (<i>City University of New York: City College</i>) • Scalable Training on GEB Technologies for Commercial Building Operations (<i>Association of Energy Services Professionals & Northeastern University</i>)
<p>Building Safety Officials</p>	<ul style="list-style-type: none"> • Online Training Hub for Firefighters & Supporting Research (<i>National Fire Protection Association; International Association of Fire Fighters</i>) • Online Training Hub for Building Safety Officials & Supporting Research (<i>Interstate Renewable Energy Council; Southface Energy Institute; New Buildings Institute</i>)

Green Buildings Career Map - Advancement Pathways



- **11** in-demand, entry-level occupations featured across sectors
 - Each with advancement potential within the Green Buildings Industry
- Features 32 “New Collar” positions that don’t require a college degree ranging from entry- to advanced level roles
- Resources page on website features trade association, academia, and labor organization resources for prospective workers:
<https://greenbuildingscareermap.org/resources>

Useful Links for More Information on Clean Energy Jobs

- Apply to DOE's Office of Energy Efficiency and Renewable Energy Funding Opportunities: <https://eere-exchange.energy.gov/>
- Better Buildings Workforce Portal: <https://betterbuildingssolutioncenter.energy.gov/workforce>
- Clean Energy Career Maps: <https://www.energy.gov/eere/education/map-career-clean-energy>
- Federal Energy Management Program Training: <https://www.energy.gov/eere/femp/federal-energy-management-program-training>
- Solar Workforce Development: <https://www.energy.gov/eere/solar/solar-workforce-development>
- STEM for Marine Energy & Hydropower: <https://openei.org/wiki/PRIMRE/STEM>; <https://openei.org/wiki/Hydropower/STEM>
- STEM Rising: <https://www.energy.gov/stem-rising>
- Weatherization Assistance Program Training Providers: <https://nascsp.org/wap/waptac/weatherization-training-centers/>

Contact Information

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SESSION 2

Q&A



Job creation and workforce development for building renovation





CONCLUSIONS & NEXT STEPS

Lotte Schlegel

Executive Director, Institute for Market Transformation



Job creation and workforce development for building renovation



Stay tuned for our upcoming
webinar: *Building standards and
codes to tackle climate goals –*

11 January 2022

www.bpie.eu

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