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BOC INFORMATIONAL WEBCAST

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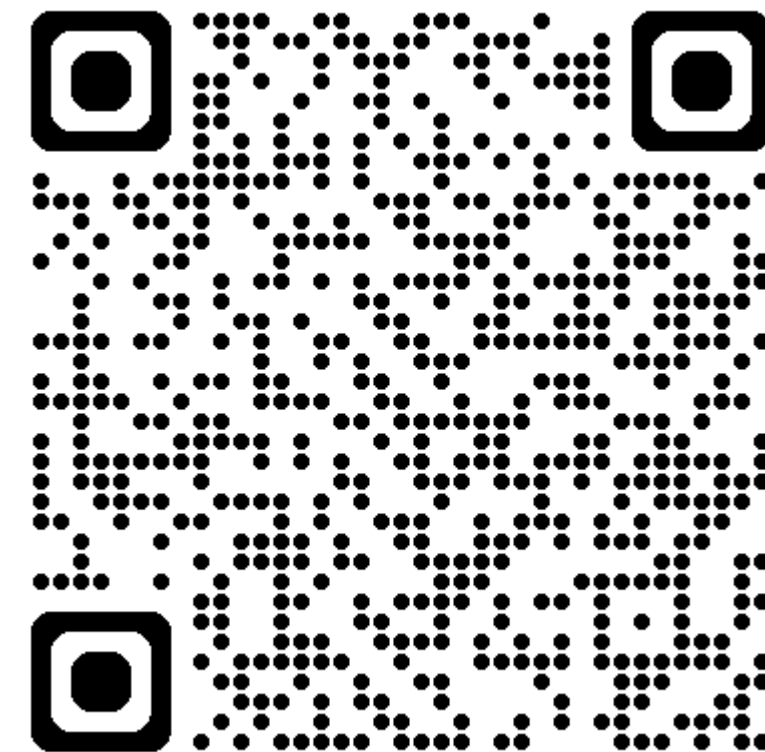
▶ Envisioning a World with Net-Zero Carbon Emissions

Building Potential's mission is to eliminate carbon emissions from building energy use through market-based thought leadership, education, and advocacy.



Building Potential

Visit us at BuildingPotential.org



Today's Agenda

- Overview of Building Operator Certification program and credentials
- Training content & learning outcomes
- Eligibility & credential requirements
- Benefits of BOC-credentialed personnel
- Q&A



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Building Operator Certification® (BOC)

THE ESSENTIAL CREDENTIAL

- Leading training and credentialing program for building engineers and maintenance personnel
- Graduates gain skills to make their buildings more:
 - Comfortable
 - Efficient
 - Environmentally friendly
- Graduates help their organizations substantially cut operating costs (as much as \$20,000 per year)



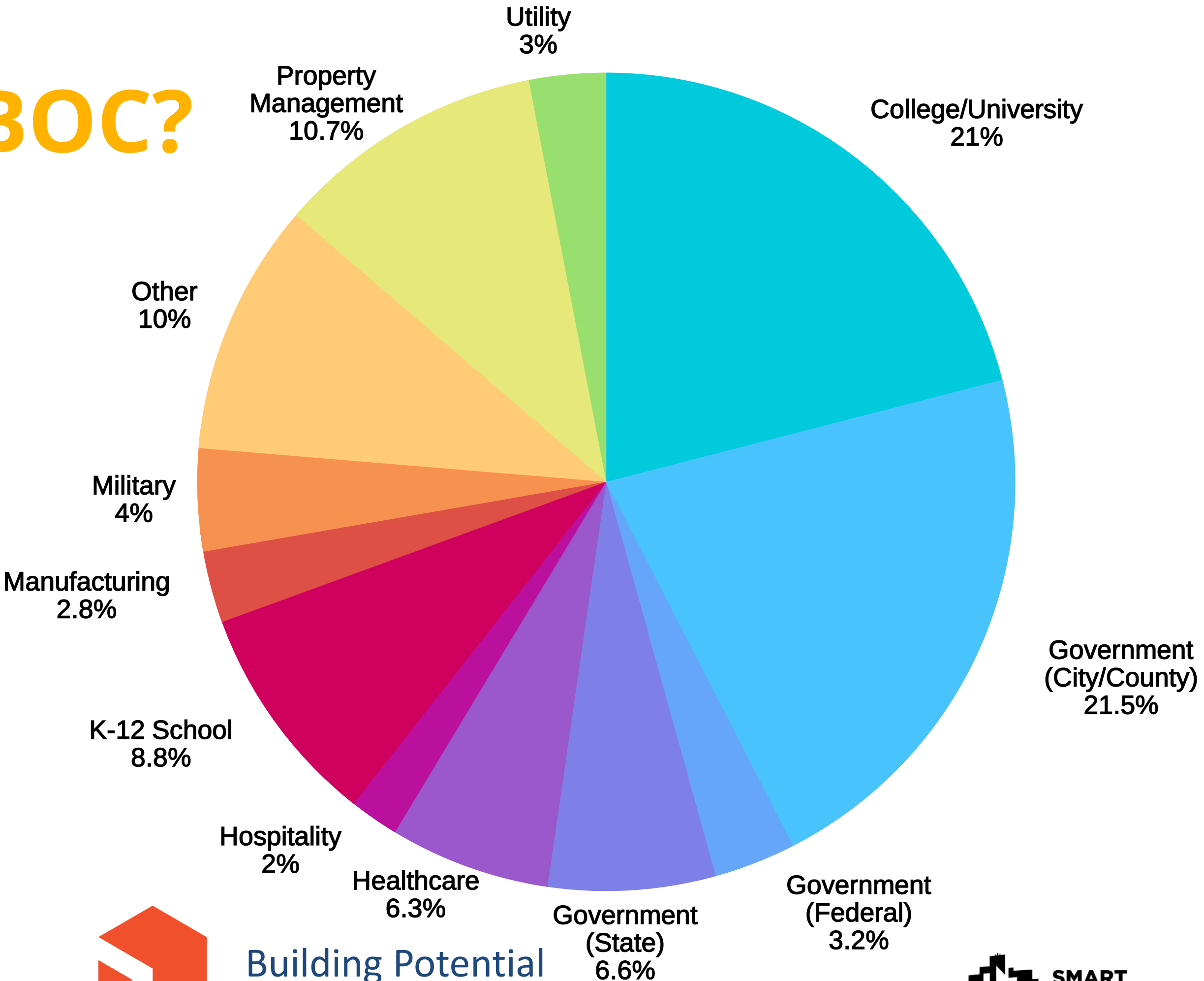
Photo courtesy of Resource Media



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Who attends BOC?



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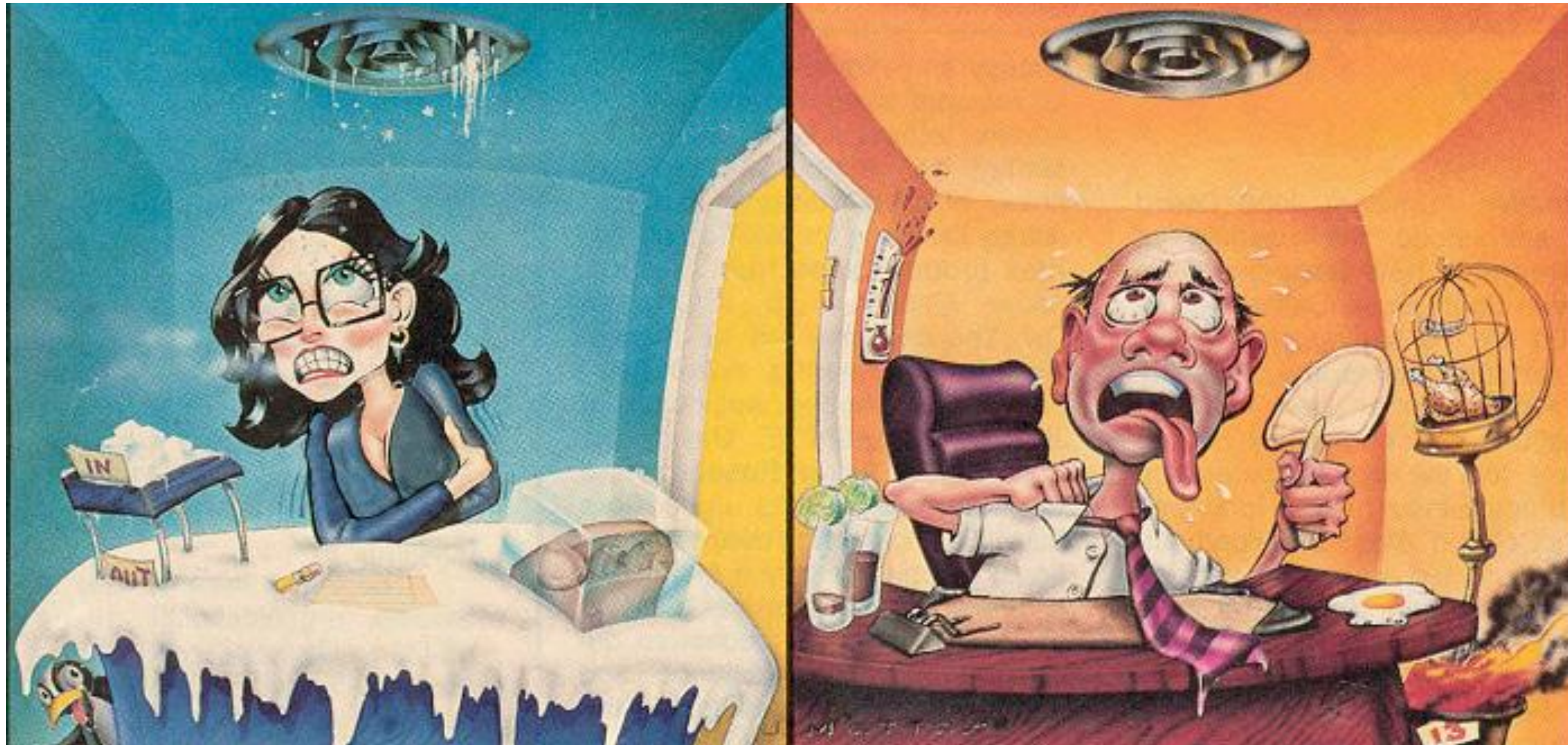
What is your biggest concern at your building or facility?



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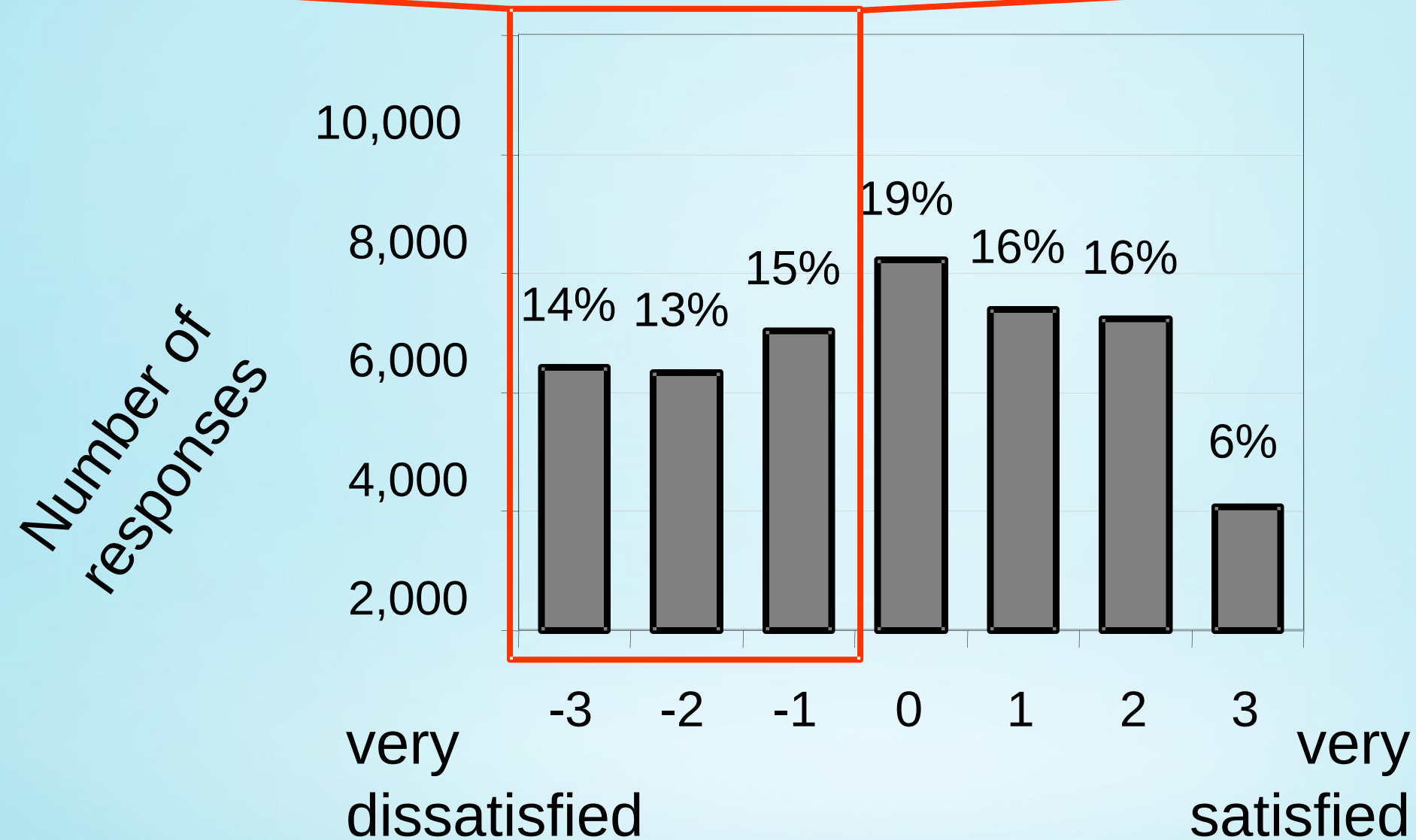


Are building comfort complaints your biggest concern?

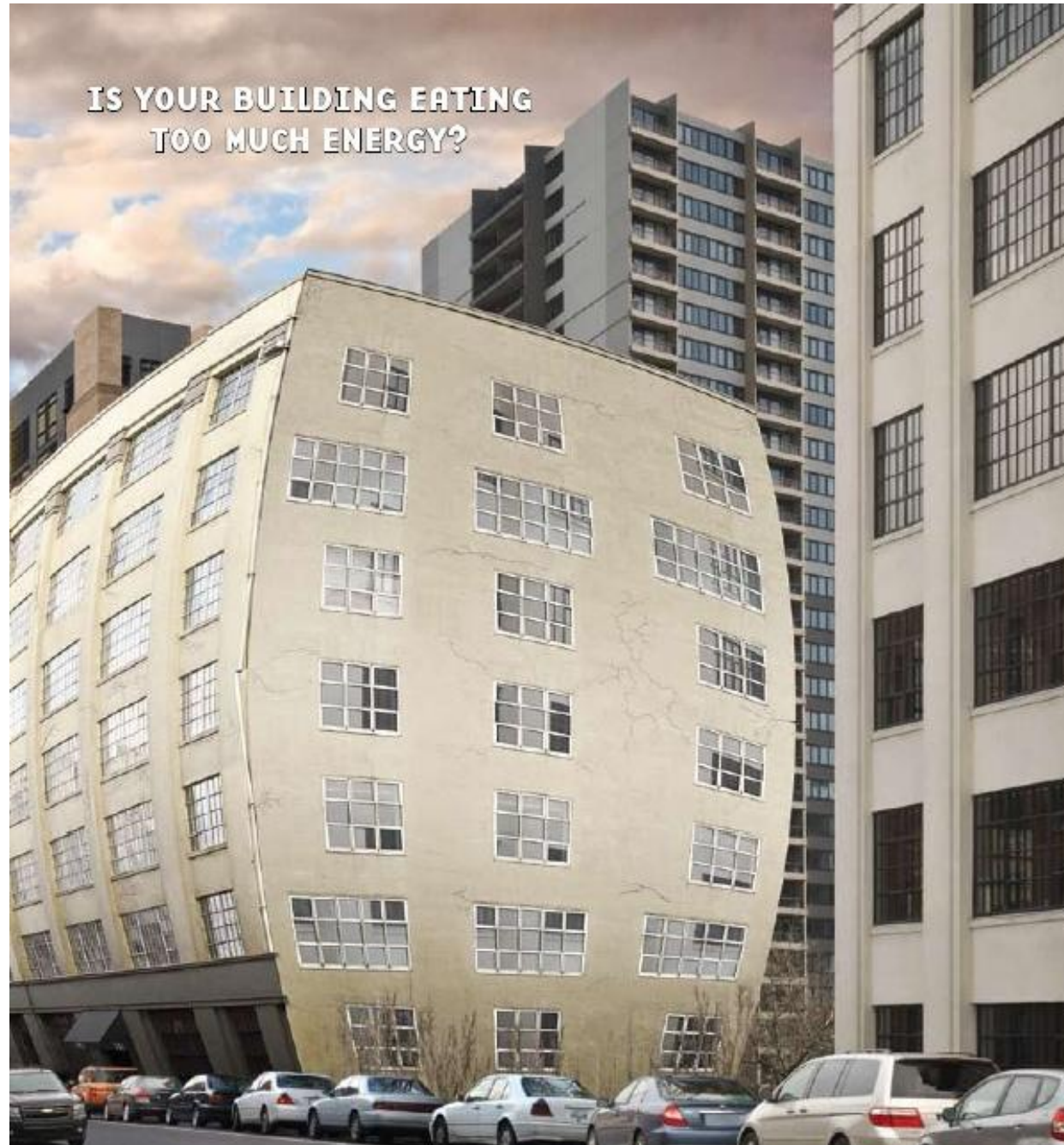


How satisfied are you with the temperature in your workspace?

42% of workers are dissatisfied with the thermal environment.



Is your building wasting energy?



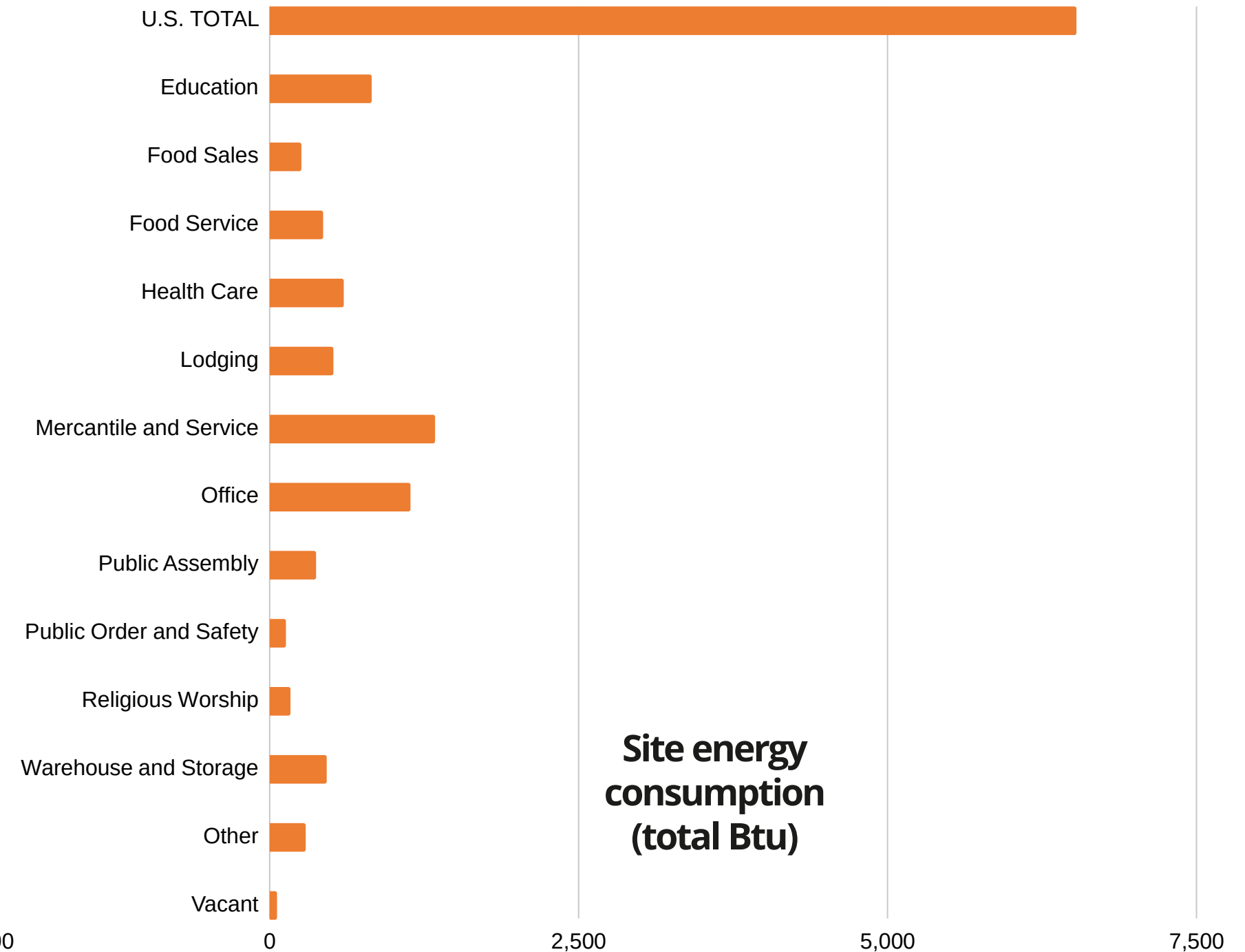
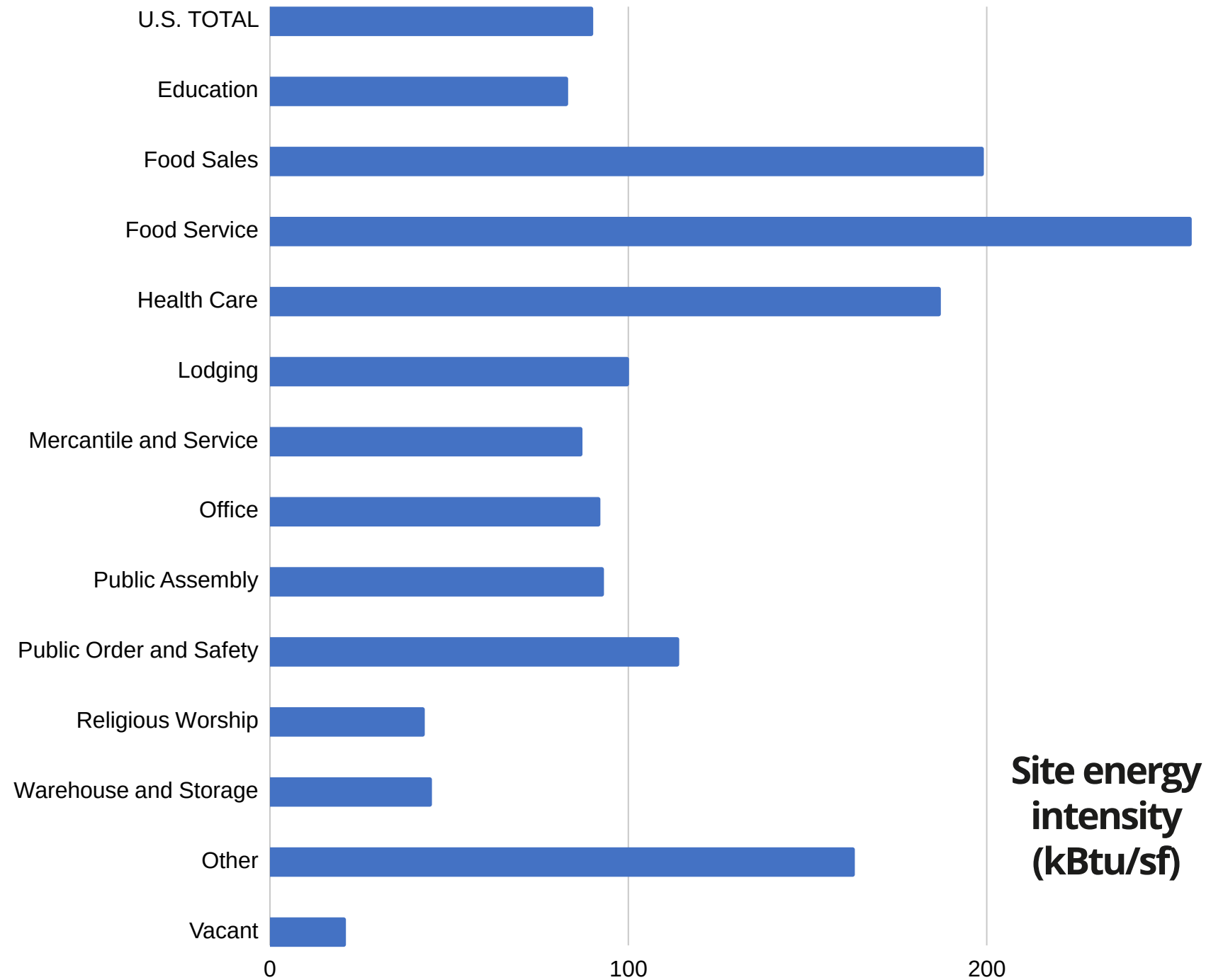
Most buildings can cut total energy use by 5-30% while fully maintaining or improving both comfort and function.



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How much energy is your building consuming?



Source: Commercial Buildings Energy Consumption Survey, Energy Information Administration



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**Does your organization encourage
and support professional training
and credentialing?**



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Three levels of training demonstrate different job performance outcomes:

Fundamentals of Energy Efficient Building Operations:

- Achieve general awareness of facilities and instill efficiency ethic
- Strengthen building optimization skills
- Identify areas for energy savings
- Make energy-smart decisions in day-to-day task

Level I: Building Systems Maintenance

- Foundational understanding of electrical, HVAC and lighting systems and controls.
- Benchmark building energy consumption
- Identify low-cost/no-cost operations improvements
- Establish or review preventative maintenance program
- *Multifamily specific course available*

Level II: Efficient Operations

- Advanced building energy consumption analysis
- Optimizing HVAC controls for efficiency
- Advanced skills in equipment operations and functional testing
- Water use efficiency
- Presentation skills



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Who is eligible for BOC?

Fundamentals: An interest in pursuing a career in building operations/energy management

Level I: 2 or more years work experience in operation and maintenance or energy management of commercial facilities, or combination of education and experience

Level II: 3+ years' experience in the field with a technical college degree; 4+ years' experience and completion of BOC Level I



Photo courtesy of Resource Media

Who attends?

Operating engineers, Maintenance mechanics, HVAC technicians, Electricians, Controls techs, Building managers, Engineering project managers



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Fundamentals of Energy Efficient Building Operations



Part 1: Energy Efficiency and Sustainability Overview



Part 2: HVAC Fundamentals



Part 3: Lighting Fundamentals



Part 4: Energy Management



Part 5: Energy Conservation Opportunities



Part 6: Indoor Environmental Quality



Part 7: Putting It All Together



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Level I Knowledge & Skills

- BOC 1001 - Energy Efficient Operation of HVAC Systems
- BOC 1002 - Measuring Energy Performance
- BOC 1003 - Efficient Lighting Fundamentals
- BOC 1004 - HVAC Controls Fundamentals
- BOC 1005 - Indoor Environmental Quality
- BOC 1006 - Common Opportunities for Operational Improvement

Supplemental Classes: Electrification for Building Operations, Electrical Systems, O&M for Sustainable Buildings, High Performance HVAC, Smart Buildings Fundamentals



- 74 hours of training
- 5 application projects
- 700 pages of reference books



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Level I Multifamily Knowledge & Skills

- BOC MF1001 Energy Efficient Operation of Multifamily Building HVAC Systems
- BOC MF1002 Measuring and Benchmarking Energy Performance in Multifamily Buildings
- BOC MF1003 Efficient Lighting Fundamentals in Multifamily Buildings
- BOC MF1004 Multifamily Facility Electrical Systems, HVAC Controls, and Smart Buildings Fundamentals
- BOC MF1005 Indoor Environmental Quality in Multifamily Buildings
- BOC MF1006 Common Opportunities for Low-Cost Operational Improvement in Multifamily Buildings
- BOC MF1008 Operations and Maintenance Practices for Sustainable Multifamily Buildings

- 74 hours of training
- 5 application projects
- 700 pages of reference books



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Level II Knowledge and Skills

BOC 2001 - Scoping Your Building for Operational Improvements

BOC 2002 - Optimizing HVAC Controls for Energy Efficiency

BOC 2003 - Intro to Building Commissioning

BOC 2004 - Water Efficiency for Building Operators

BOC 2005 - Project Peer Exchange: Present Your Final Scoping Report

Supplemental Classes: Preventive Maintenance & Troubleshooting

Principles, Motors in Facilities, Advanced Electrical Systems

Diagnostics, Mastering Electric Control Circuits, Enhanced Automation and Demand Reduction

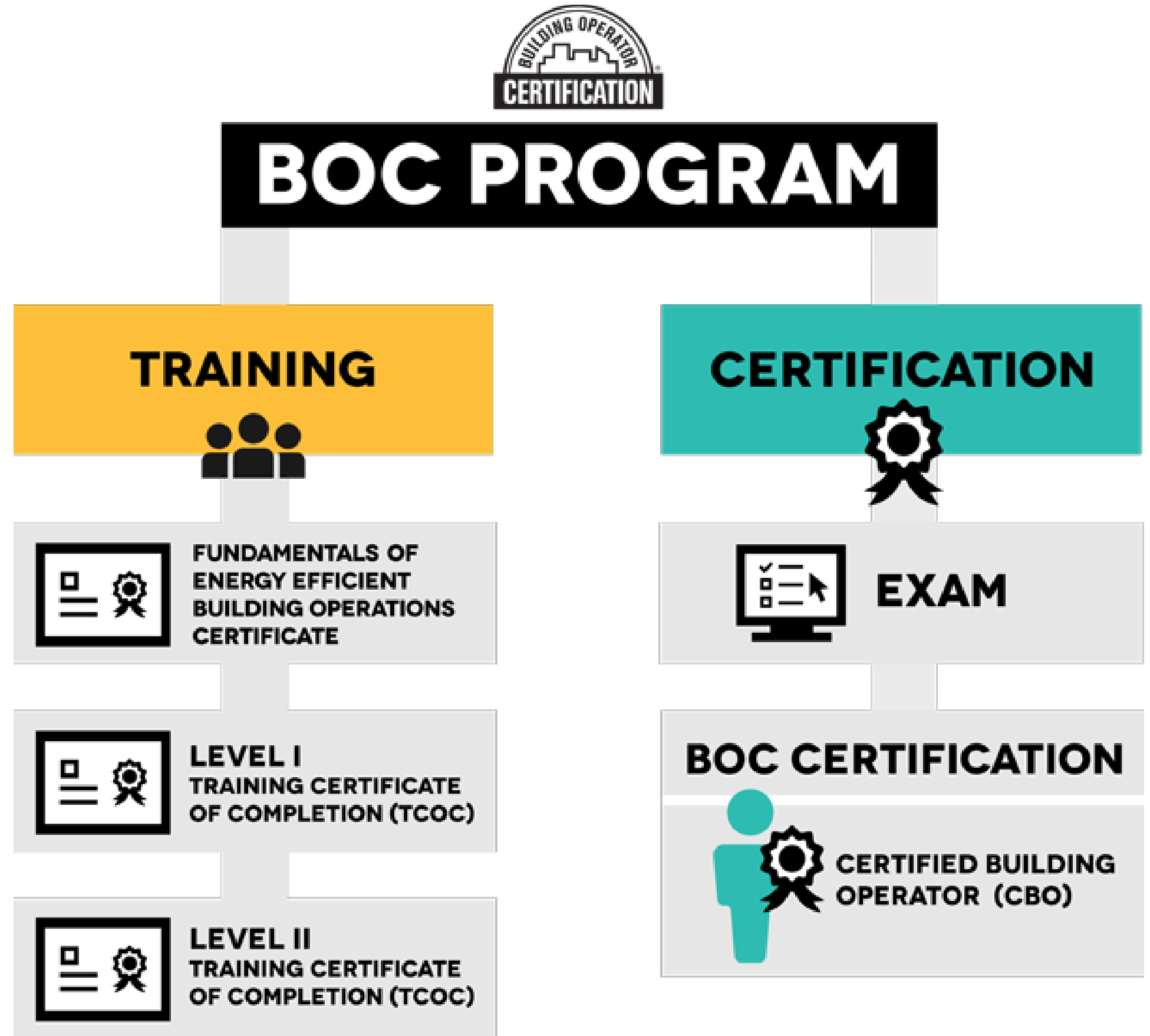
- 61 hours of training
- 5 application projects
- 600 pages of reference books



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BOC Credential Structure



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BOC Credentials

- Verify your experience and industry knowledge
- Demonstrate commitment to professionalism
- Enhance job opportunities
- Help increase job safety
- Help improve operator productivity and building performance



Photo courtesy of Resource Media



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David Baker
Resource Conservation Planner
Department of Enterprise Services

BOC Level 1 - 2023
BOC Level 2 - 2024

Current role since 2022

Experience with facilities and infrastructure



Primary responsibilities as a Resource Conservation Planner:

- Track energy use on the State Capitol Campus
- Benchmarking
- Clean Buildings Performance Standard
- Capital planning
- Greenhouse Gas reporting
- Stormwater reporting



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Primary benefits of BOC training:

- Improves awareness of the general to knowledge of the specific
- Connections between components and systems
- Troubleshooting systems and equipment
- Create useful analysis tools
- Additional resources
- Ask better questions
- Give better answers



Challenges

- Lack of understanding
- Multiple departments
- External communication
- Funding
- Staff time
- Processes
- Priorities
- Deferred maintenance



BOC training vs. Challenges

- Improves contextual understanding
- Speak to the different groups (boots and suits)
- Analysis tools provide objective information
- Networking
- Your problems are common
→ solutions are out there



Tests

Fundamentals:

One comprehensive test at training conclusion
Level I and Level II tests given at the end of
each class day

- Cover content covered in class
- Are **open-book**
- 1 hour to complete

Back-on-the-Job Project Assignments

- Demonstrate your ability to apply skills covered in BOC classes
- Required to earn the BOC Training Certificate of Completion (Levels I and II)

- HVAC Equipment Floor Plan
- Energy Benchmarking
- HVAC Control Settings
- Lighting Survey
- Occupancy Schedule




Photo courtesy of Resource Media



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Back-on-the-Job: Energy Benchmarking With Energy Star® Portfolio Manager



LEARN MORE AT
energystar.gov

ENERGY STAR® Statement of

90

ENERGY STAR®
Score¹

1234 Broadway St.

Primary Property Function: Other
Gross Floor Area (ft²): 400,000
Built: 1999

For Year Ending: June 30, 2008
Date Generated: August 06, 2013

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings in the same area and business activity.

| Normalized Benchmark Data | ENERGY STAR | Your Bldg. |
|---|---------------|---------------|
| Energy Performance Rating: | 75 | 60 |
| Energy Consumption: (kBtu/ft2-yr): | 95 | 123 |
| Energy Costs/SF/YR: | \$1.75 | \$2.50 |

| Property & Contact Information | |
|--------------------------------|-----------------------|
| Property Address | Property Owner |
| 1234 Broadway St. | _____ |
| 1234 Broadway St. | _____ |
| Annapolis, Maryland 21403 | () _____ |



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Back-on-the-Job: HVAC Control Settings

- System programmed settings review
- Verify damper settings
- Check critical sensor calibration
- Review occupant complaint records and remedies
- Review established temperature set points



Photo courtesy of Resource Media



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Back-on-the-Job: Lighting Surveys

- Inspect lighting fixtures and lamps to assess type and wattage
- Identify cleaning and repair
- Measure light levels and compare to IES illumination recommendations
- Recommend improvements for energy performance
- Identify utility incentives

Photo courtesy of Resource Media



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To Earn Your Training Certificate of Completion (TCOC)

- Attend BOC classes
- Earn a passing score of >70% on all in-class tests
- Complete in-facility project assignments
- Submit a Training Certificate of Completion Application

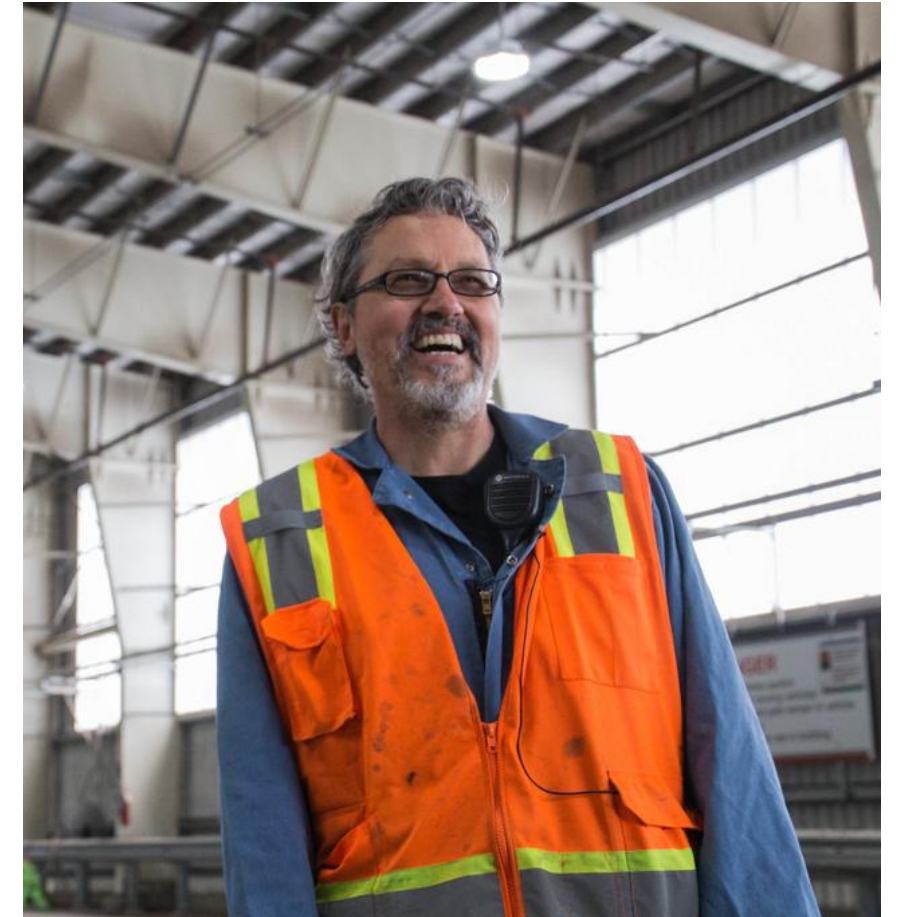


Photo courtesy of Resource Media



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To Earn BOC Certification

- Hold a BOC Level I TCOC or complete equivalent training.
- If you successfully pass the exam (67%), you will obtain the BOC Certification credential and use the Certified Building Operator (CBO) designation
- BOC's Certification program is aligned with International Standards Organization (ISO) 17024
- Assures valid and verified assessment of knowledge and skills in energy efficient building operation – gives BOC graduates even more of a competitive advantage in the industry.



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Maintaining Your BOC Credential

- BOC will notify you in advance
 - January of year you are due for maintenance
 - Maintenance fee is \$75
- Requires five points each year for Level I TCOC, ten points for Level II
- Certification auto renews with TCOC
- *Not required for Fundamentals certificate*

**Are you considering the BOC®
program for yourself or others?**



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Fees

Training Tuition

Includes:

- Technical training
- Student Handbooks
- Project Workbook
- Tests
- Credential

Certification Exam - \$325

Credential Maintenance - \$75/year

- Subscription to BOC Bulletin
- Free continuing education opportunities
- Listing in BOC Registry

BOC® Credentials | Learn. Lead. Sustain.

EARN IT

- Welcome letter
- Notification to employer
- Certificate
- Wallet card and clothing patch
- Online BOC registry
- Subscription – BOC Bulletin

MAINTAIN IT

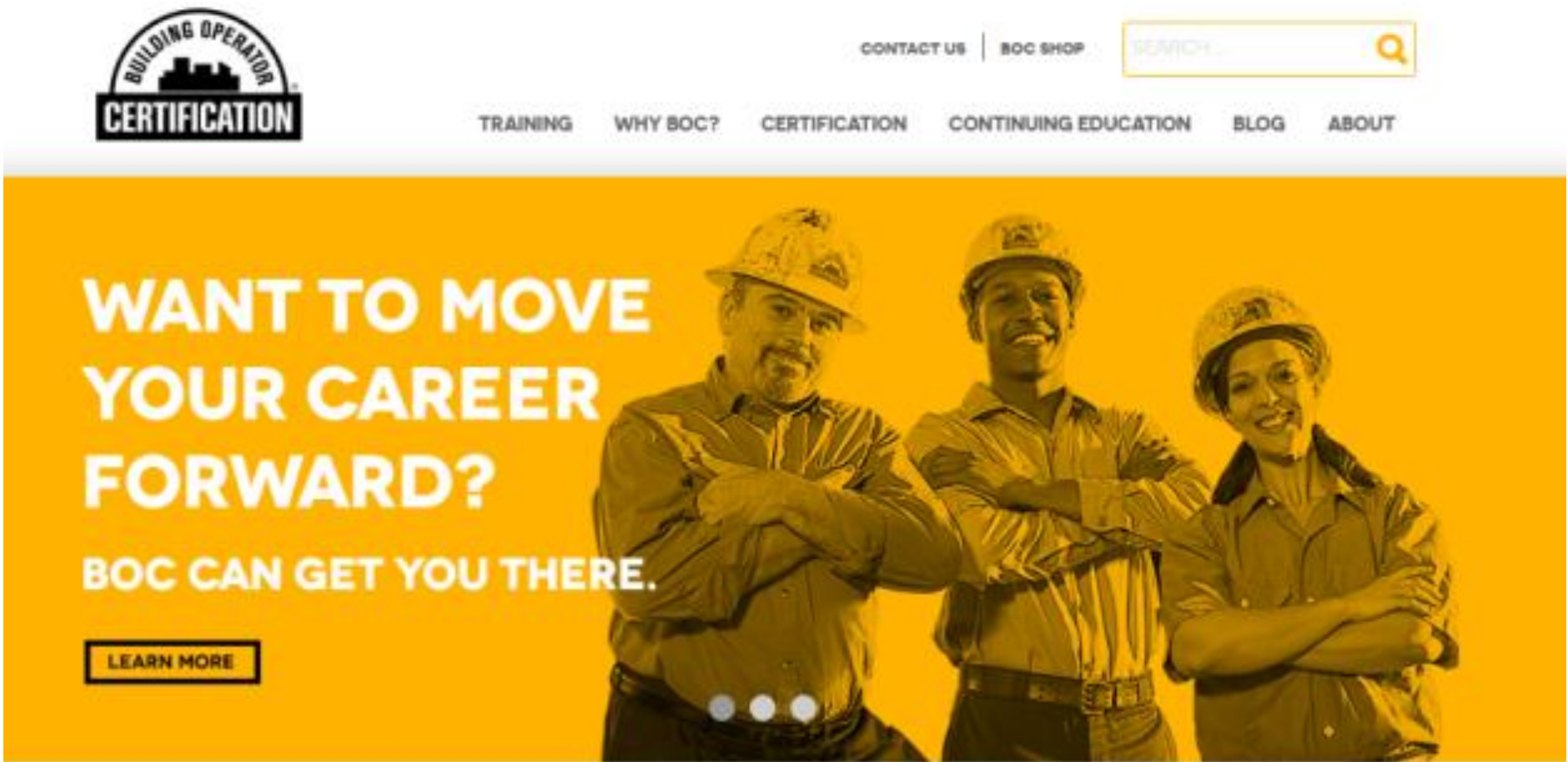
- Annually by March 31
- Continuing Education
- Annual Maintenance points
 - 5 Level I TCOC or Certification
 - 10 Level II TCOC
- Learn, Lead, Sustain



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Have you visited the BOC Website?



THE ESSENTIAL CREDENTIAL

Building Operator Certification® (BOC) is the leading training and certification program for building engineers and maintenance personnel. Our graduates make their buildings more comfortable, efficient and environmentally friendly, thanks to skills they master in our classes.

And the BOC credential is just as valuable to building owners as it is to operators. Our graduates help their organizations substantially cut operating costs – as much as \$20,000 per year.

Is BOC for you? [LEARN MORE](#) about what we offer.

FIND TRAINING

GET UPDATES



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2025 Webinar Schedule

2025 LIVE WEBINARS

- ▶ **Developing a Decarbonization Plan for Your Building**
February 19, 2025
- ▶ **Smart Pumps, Motors & Drives**
March 19, 2025
- ▶ **Retrofitting Fossil Fuel-Based Equipment with Heat Pumps**
April 16, 2025
- ▶ **Artificial Intelligence and the Future of Building Controls & Security**
May 21, 2025
- ▶ **Strategies to Help Reduce Peak Energy Use**
September 17, 2025
- ▶ **Building Walkthrough - Finding Energy Waste**
October 15, 2025



Register @ <http://www.theboc.info/continuing-education/webinars/>

TIME:

11 a.m. Pacific | 12 p.m. Mountain | 1 p.m. Central |
2 p.m. Eastern

Check out the recorded webinar library!



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Skilled Building Operators

- Make your building comfortable, reducing comfort calls.
- Save ~\$10,000 yearly in energy costs.
- Work effectively with vendors.
- Bring ideas for improving operations.



Photo courtesy of Resource Media



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BOC® Information Webcast

time for ...



BOC HELPDESK | 9 AM – 12 PM Pacific M-F | Phone: 877-850-4793

Visit us at www.theBOC.info

Contact us at BOCinfo@theBOC.info



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