

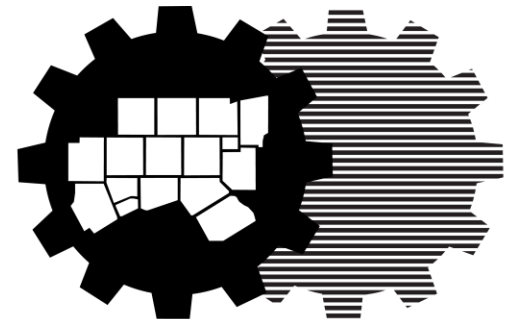


# Operational Maintenance Protocols & Policies

**HOW THEY CAN HELP YOU ACHIEVE  
ENERGY, WATER, AND COST SAVINGS**

NORTH CENTRAL TEXAS COUNCIL OF  
GOVERNMENTS

JULY 25, 2024



North Central Texas  
Council of Governments

# Welcome & Housekeeping

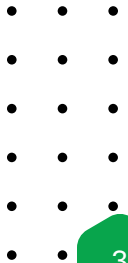
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- Please keep your microphone on mute until the end of the presentations.
- We will have an open Q&A session at the end of all the presentations. Please type your question in the chat box or raise your hand to speak.
- The webinar slides and recording will be posted on the Conserve North Texas website under News/Events -> Event Archive
  - <http://conservenorthtexas.org/event-archive>
- Thank you!

# Workshop Sponsor



NCTCOG receives funding through SECO to work on energy management and efficiency projects within the region. As part of this work, we have provided webinars and technical assistance on a variety of energy management, energy efficiency, and renewable energy topics.



# Who We Are

## HOW DO WE SUPPORT ENERGY MANAGEMENT EFFORTS FOR ENTITIES ACROSS THE STATE?



NCTCOG is a regional planning agency serving North Texas local governments on a variety of topics. NCTCOG's Regional Energy Manager project is an ongoing effort to identify energy management needs, increase awareness to the local government energy reporting requirements, and provide resources to assist local governments in energy conservation efforts.



SECO partners with local governments, public K-12 schools, public institutions of higher education and state agencies, across Texas to reduce utility costs and maximize energy efficiencies.

# Today's Speakers

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1. Cliff Braddock, CEM, LEED AP  
Director Business Development, Metco Engineering Inc.
2. David Handwork, PE, CEFP  
Chief Engineering and Technology Officer, United Commercial Energy Partners
3. Liz John  
Managing Director, SPEER
4. Jonathan Kraatz  
Executive Director, USGBC Texas

# Speaker Introduction

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**Cliff Braddock, CEM,  
LEED-AP, Eco-Districts - AP**

Director Business  
Development, Metco  
Engineering Inc.

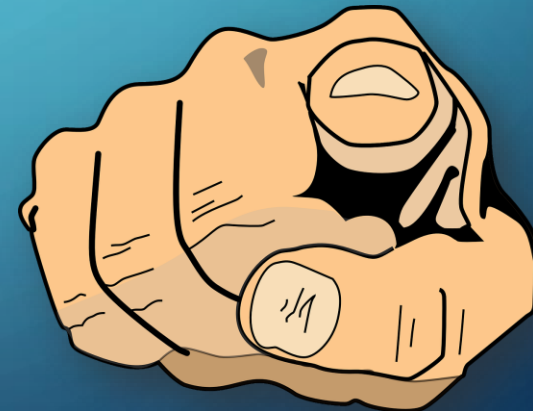




# Integrated Approach to Energy Management Includes “YOU”

North Central Texas Council of Governments  
Operations and Maintenance Webinar  
July 25, 2024

Cliff Braddock  
Director Business Development  
Metco Engineering, Inc.



# WHAT DO WE EXPECT FROM OUR BUILDINGS...

## Mandated?



### Design Attributes of a Fantastic Public Building:

Productive and efficient environment for staff and visitors

How to do it: ASHRAE, Codes, LEED, Energy Star, etc.

No\*

Energy Efficient - low utility costs

How to do it: Incentives, ROI, Measure and Validate, Benchmark

No

Resiliency – reliable when utility grid goes away

How to do it: Onsite energy, microgrid, fuel diversification, redundancies

No

Decarbonization

How to do it: Design, supply chain, renewable energy, net zero roadmap

\*Some jurisdictions have Energy Conservation Audit and Disclosure Ordinances or LEED requirements



# LIFE CYCLE COST TO OWN AND OPERATE YOUR BUILDING...





# LIFE CYCLE COST TO OWN AND OPERATE



- **Depreciation** : Reduction in the cost of asset over time.
- **Fuel (utilities)**: Energy costs.
- **Operations and Maintenance**: Oil, tires, HVAC, electrical, mechanical, insurance, etc.

|                  |           |                               |
|------------------|-----------|-------------------------------|
| Initial Cost     | \$33,000  | <b>27% of life cycle cost</b> |
| Annual Milage    | 15,500    |                               |
| Ownership length | 12 years  |                               |
| IRS Allowance    | \$121,000 | \$0.655/mile                  |

# LIFE CYCLE COST TO OWN AND OPERATE



*The Design-Build team  
controls the first 25%...*

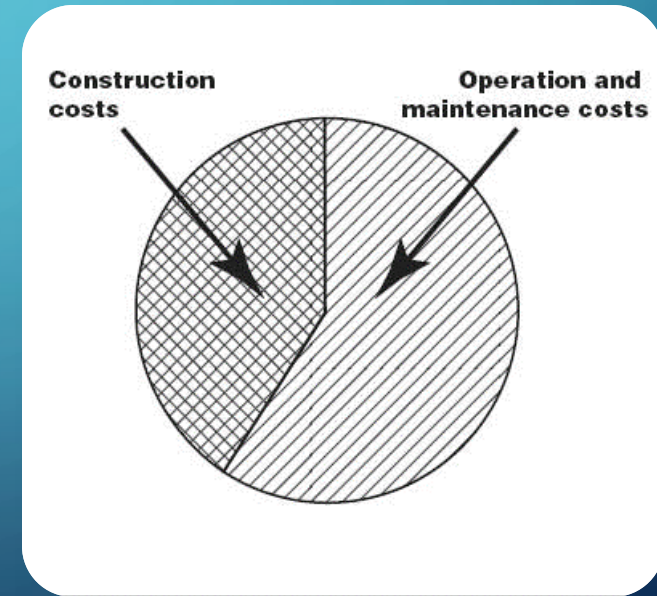
*YOU control the 75%*

# 1:5:200 RULE...

- If the initial construction costs of a building is 1,
- Then its maintenance and operating costs over the years is 5,
- Business operating costs (salaries, office supplies, etc.) is 200.

You can control O&M Costs...

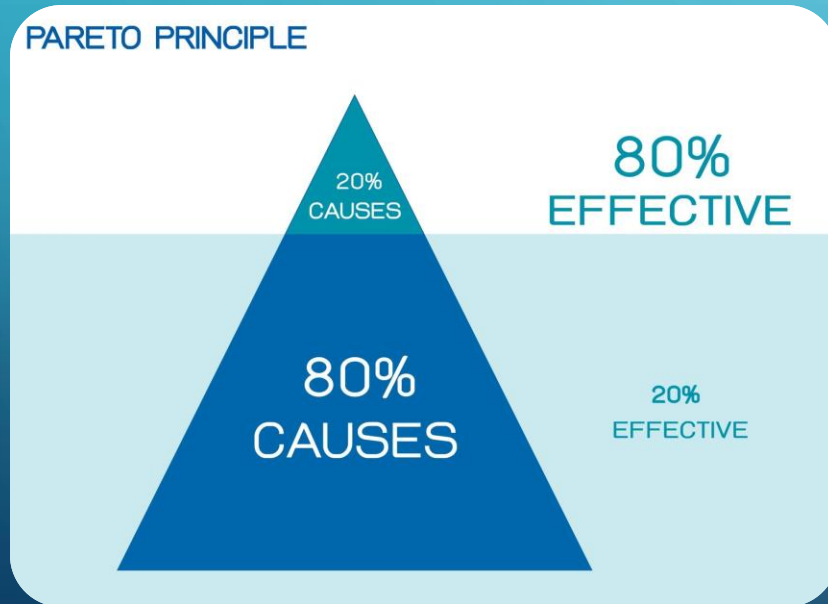
By implementing sustainable measures over the life expectancy of the building.



# SO WHERE DO YOU BEGIN...?

## What Key Performance Indicators (KPI's) are important?

- For Energy Efficiency Index: Btu/SF
- For Energy Cost Index: \$/SF
- For Resiliency: Tier rating by Uptime Institute or CAIFI (Customer Average Interruption Frequency Index)
- For Decarbonization: Scope 1, 2, 3 emissions accounting



# NOT ALWAYS ABOUT COUNTING...

Engage Facilities and Maintenance Staff

They see deficiencies that You don't see

They are your friends – on the same team.



# # 1 ENERGY EFFICIENCY

Increase Energy Efficiency



Reduction in kWh energy usage and  
Reduction in kW demand  
Improved indoor work environment  
Reduced costs for utilities



Tools:

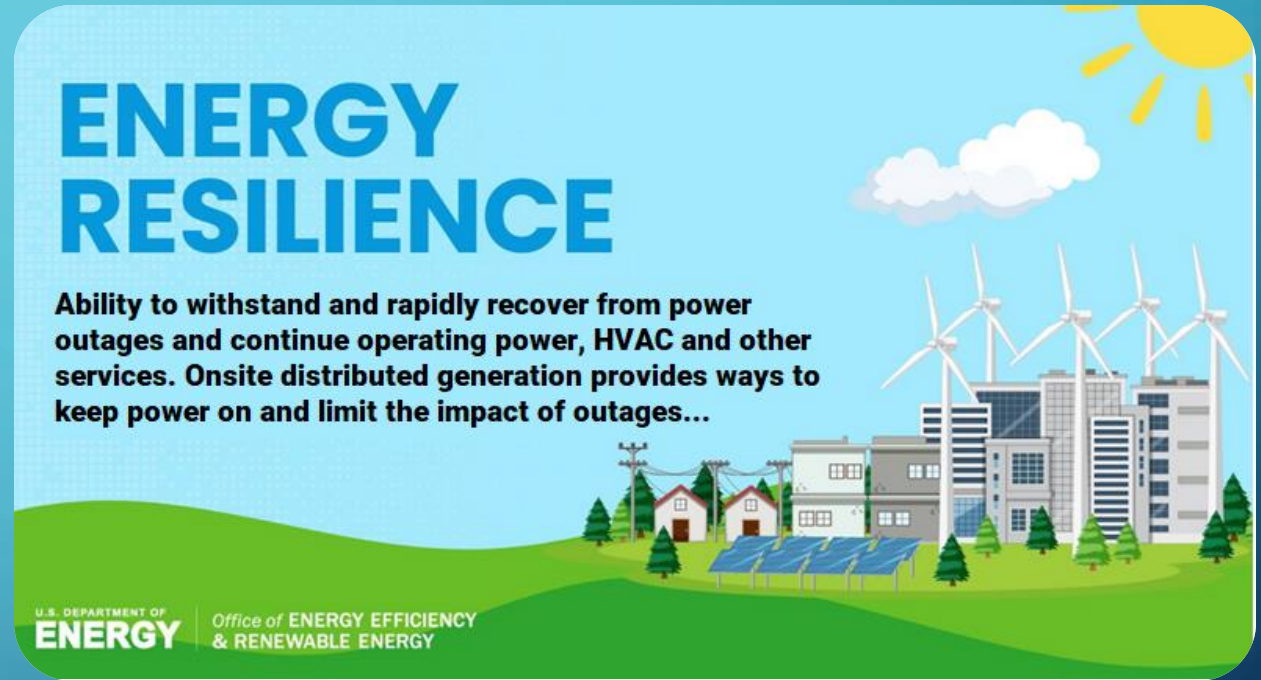


# # 2 RESILIENCY

Reduction in kWh energy usage and  
Reduction in kW demand



Smaller onsite solar and battery storage



Tools: Utility – Public Utility Commission  
SAIFI – SAIDI – CAIFI Reporting



# # 3 DECARBONIZATION

Onsite solar and energy storage



Reduces Scope 1 emissions and earns Renewable Energy Credits

- ✓ 1 kWh solar offsets .8 kg of CO<sub>2</sub>
- ✓ More CO<sub>2</sub> Reduction than trees per acre
- ✓ 1.6 year emissions return on investment



# ACTION PLAN

- Engineers and architects and contractors give you the building
- You must operate and maintain to achieve efficiency, resiliency, decarbonization
- Begin with benchmarking and setting goals and time line
- Apply Pareto's rule: 80% of the positive impact is from 20% of the opportunity
- Energy Efficiency + Renewable Energy can pay their way = budget neutral
- Smart integration with **YOU as captain** delivers Efficiency, Resiliency and Decarbonization.

# HAPPY TO CONTINUE THE DISCUSSION...

Cliff Braddock, CEM, LEED-AP

Director Business Development

METCO Engineering, Inc.

[cliffbraddock@metcoengineering.com](mailto:cliffbraddock@metcoengineering.com)

512-627-4748



# Speaker Introduction

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## **David Handwork, PE, CEFP**

Chief Engineering and Technology  
Officer, United Commercial  
Energy Partners





# North Central Texas Council of Governments

## Energy Codes and Facilities Decarbonization

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DAVID HANDWORK, PE, CEFP

UNITED COMMERCIAL ENERGY PARTNERS, LLC

ENTECH CONSULTING, LLC

# Energy Codes and Facilities Decarbonization

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## Outline and Learning Objectives

- Current Status of Energy Code Requirements for New Construction and Renovations
- Future of Energy Code Requirements – Timeline for Net Zero Emission for New Construction and Renovations
- Impact on Facilities Planning, Design, Construction, and Operations Funding of Future Energy Code Adoption
- Roadmap for Facilities Decarbonization

# Energy Codes and Facilities Decarbonization

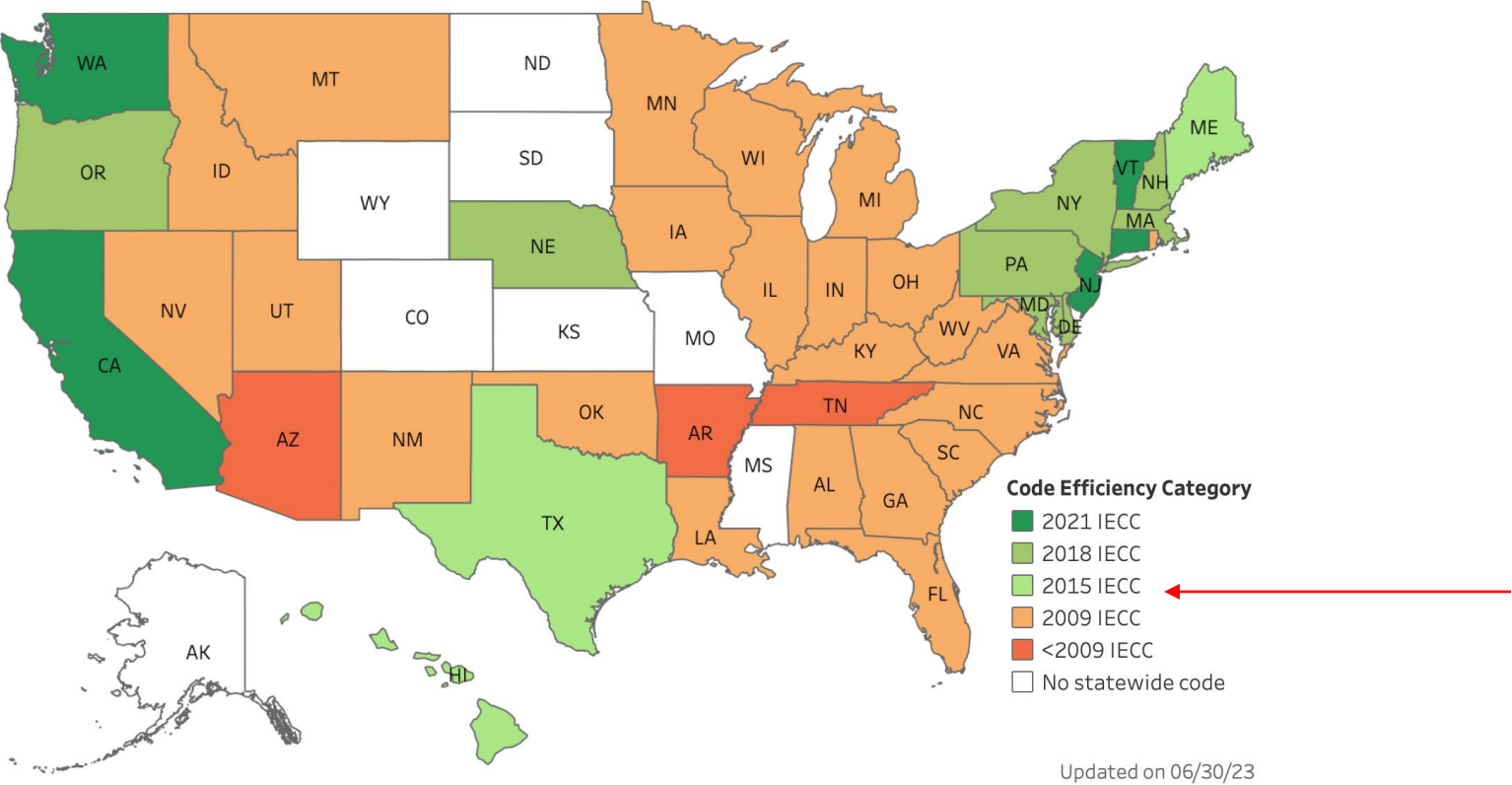
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## Current Status of Energy Codes

- ASHRAE Standard 90.1 or ICC International Energy Conservation Code (IECC) are the overall recognized code
- Varies by jurisdiction - State, County, City, or by Governance (public agencies)
- Most jurisdictions recognize IECC, however, 90.1 is common for public agencies

# Energy Codes and Facilities Decarbonization

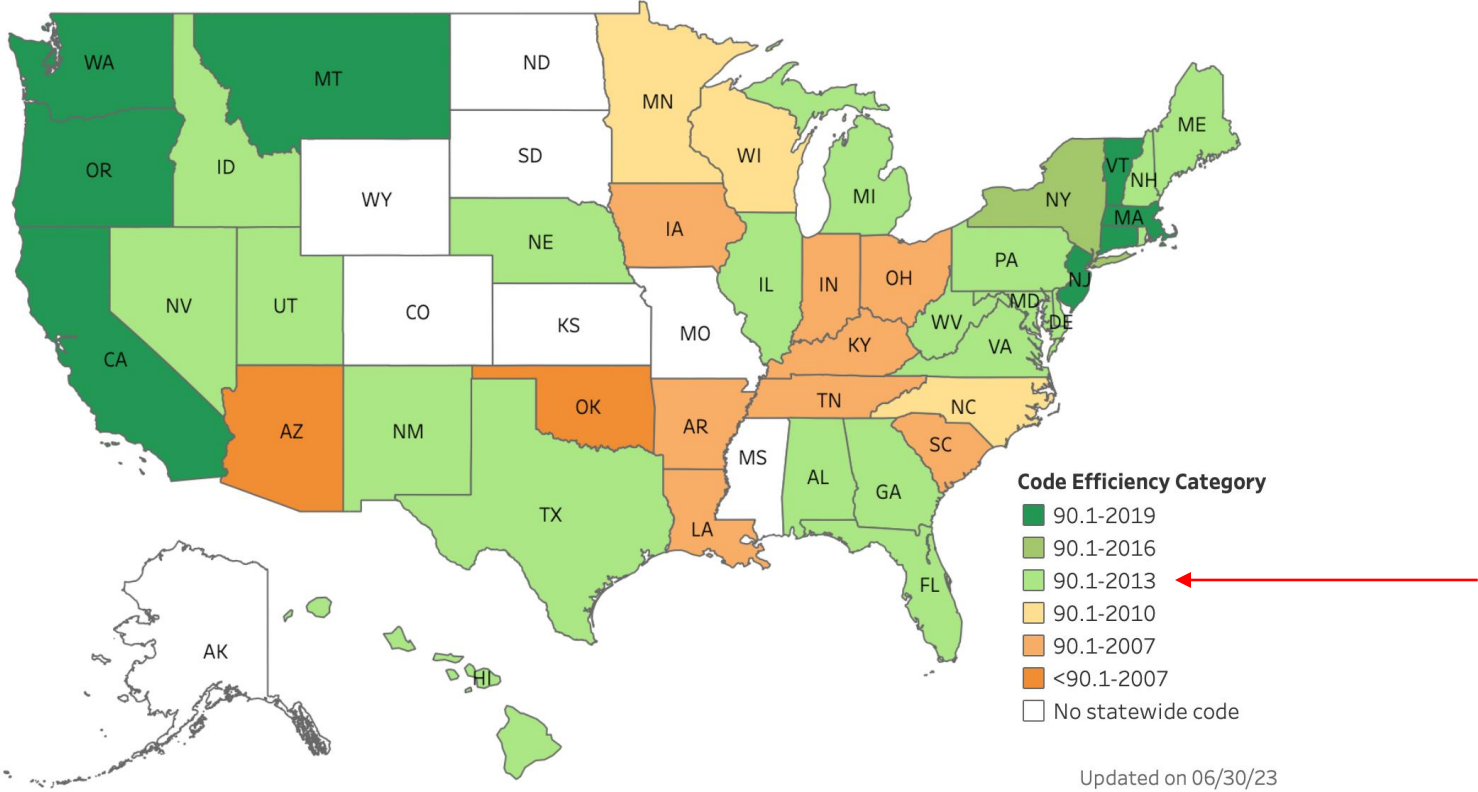
Current Residential Code (DOE)





# Energy Codes and Facilities Decarbonization

Current  
Commercial  
Code (DOE)



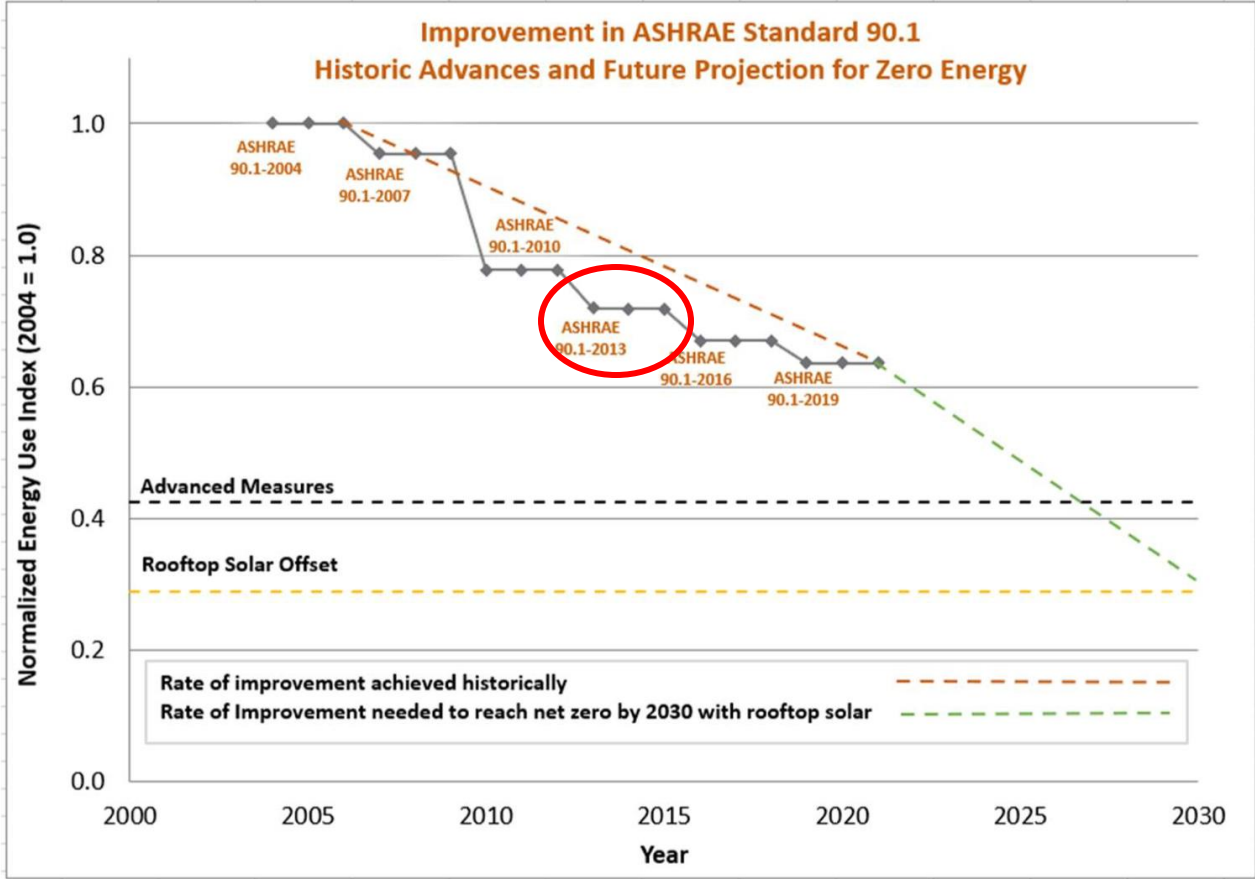
# Energy Codes and Facilities Decarbonization

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## Current Status of Energy Codes, Cont.

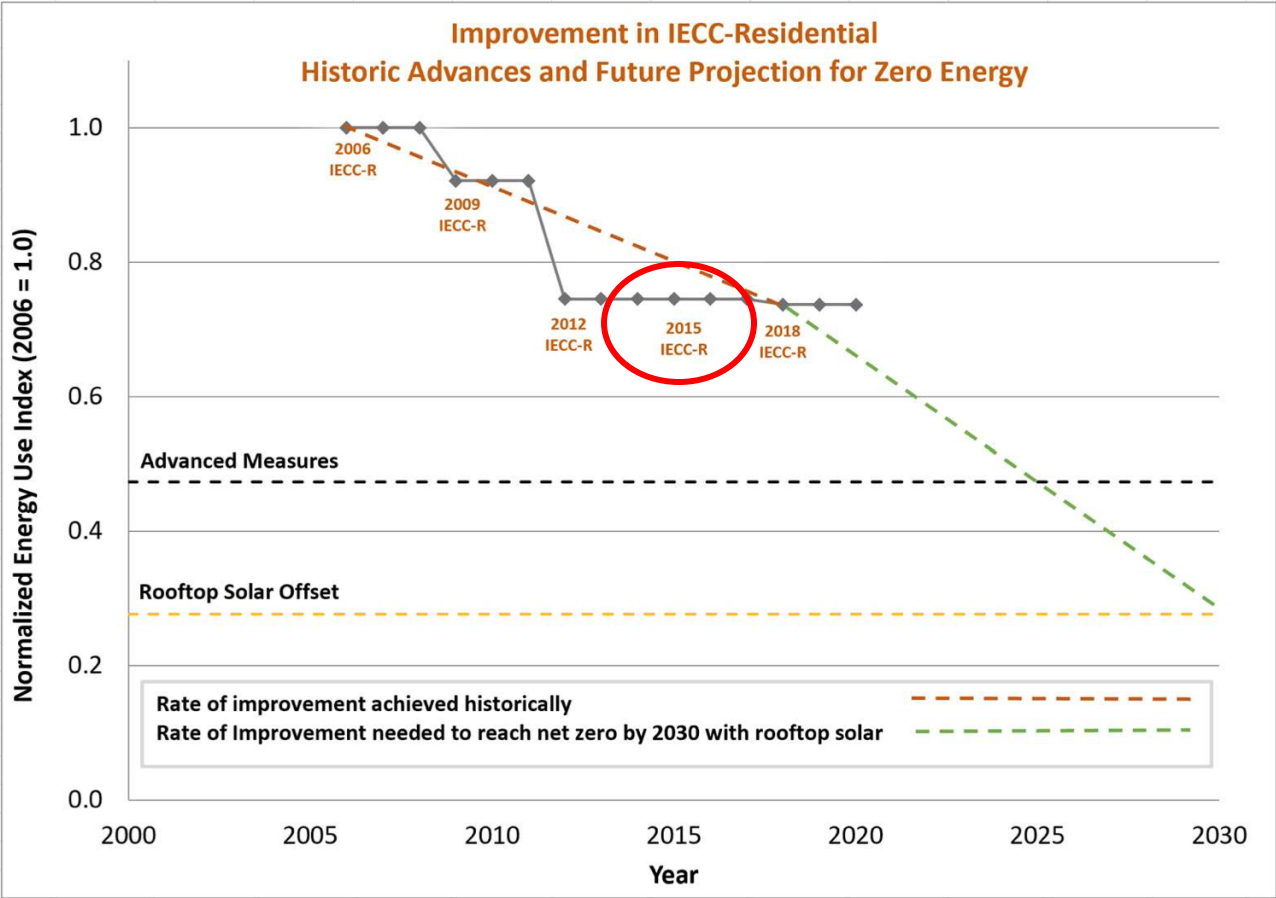
- For TX, Standard 90.1-2013 and IECC-2015 are most current version
- Most states are reviewing updates to most current versions – 90.1-2022 & IECC-2021
- Federal programs are incentivizing jurisdiction adoption – AND enforcement – of most current versions (BIL, IIJA, IRA)
- DOE / Federal current & funding may require most current version adoption / application / compliance
- I.E. – Giant leap in energy code is likely for most jurisdictions

# Energy Codes and Facilities Decarbonization



Source – PNNL 2020  
Progress Report to  
Net Zero

# Energy Codes and Facilities Decarbonization



Source – PNNL 2020  
Progress Report to  
Net Zero

# Energy Codes and Facilities Decarbonization

Table ES. 1. The Efficiency Gap to Achieve ZE Model Energy Codes <sup>9</sup>

|                      | Residential<br>(IECC 2018)      |                 | Commercial<br>(ASHRAE 90.1-2019) |                 |
|----------------------|---------------------------------|-----------------|----------------------------------|-----------------|
|                      | Code cycle                      | Filling the gap | Code cycle                       | Filling the gap |
| Advanced Measures    | 2021–2030<br>(four code cycles) | 36%             | 2022–2028<br>(three code cycles) | 33%             |
| Rooftop Solar Offset |                                 | 38%             |                                  | 48%             |
| Remaining Gap        |                                 | 27%             |                                  | 19%             |

Source – PNNL 2020 Progress Report to Net Zero

# Energy Codes and Facilities Decarbonization

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## Current Status of Energy Codes, Cont.

- IECC process changed following the IECC-2021 publication, from a “model energy code” to a standard.
- This was a result to a “series of challenges to proposals” during the adoption process
- Opinion of this presenter – a result of multiple stakeholder pressuring ICC for a plan toward Net Zero code / standard
- Both IECC and 90.1 scope is now a Net Zero Emission (NZE) work plan in the next (3) code cycles

# Energy Codes and Facilities Decarbonization

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## Future Energy Code Requirements – NZE

- Both standards will prescribe advanced energy conservation measures (plug load controls, unregulated scope, advanced thermal envelop systems, HVAC system minimum efficiencies, full integrated controls of building systems, point of use lighting, etc.) to minimize energy profile
- Both standards will prescribe electrification of facilities systems
- Both standards will prescribe renewable energy (site and/or off site)
- Both standards are supported by Federal legislation

# Energy Codes and Facilities Decarbonization

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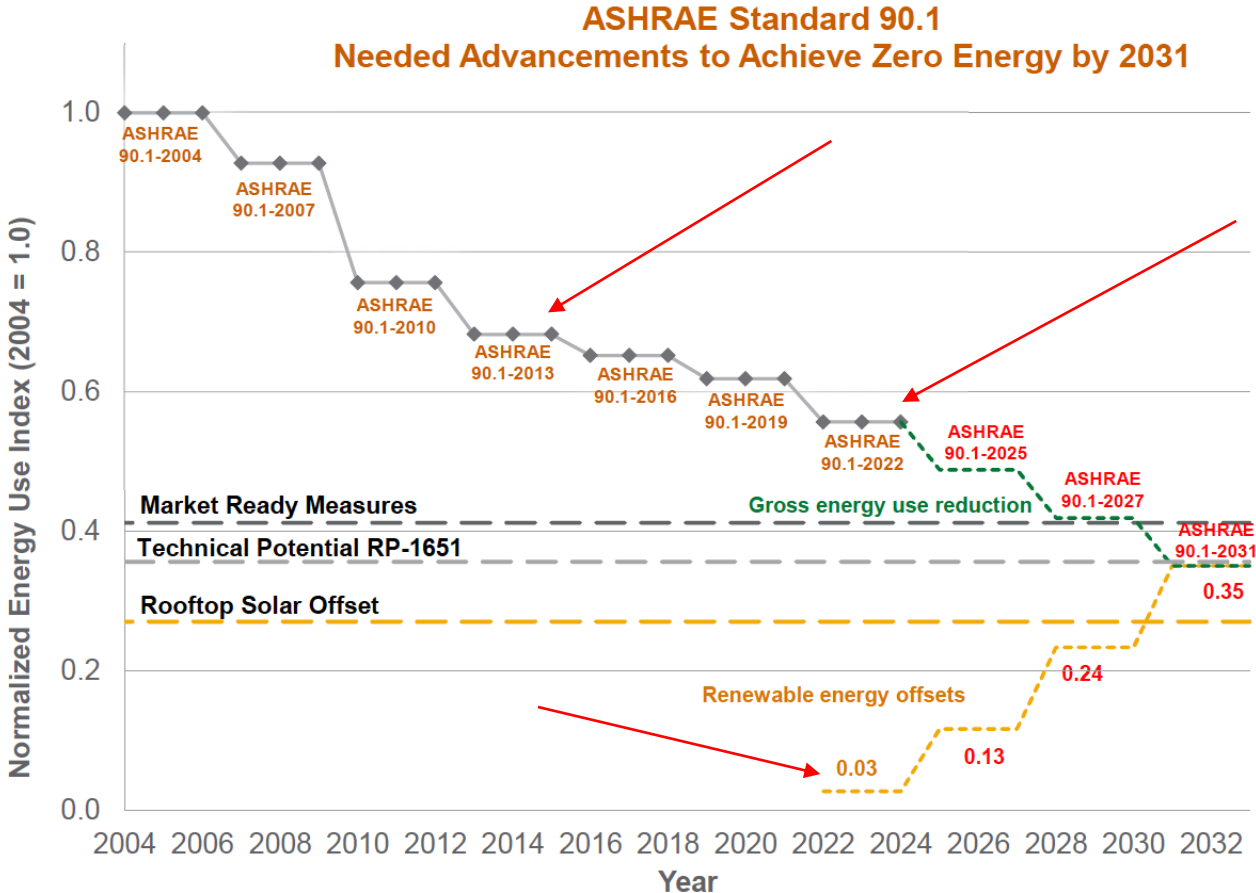
## Future Energy Code Requirements – NZE (cont.)

The Inflation Reduction Act has \$670,000,000 available through September 30, 2029, to carry out activities under part D of title III of the Energy Policy and Conservation Act (42 U.S.C. 6321 through 6326) in accordance with subsection (c).

- (c) ZERO ENERGY CODE.—The Secretary shall use funds made available under subsection (a)(2) for grants to assist States, and units of local government that have authority to adopt building codes
  - (1) to adopt a building energy code (or codes) for residential and commercial buildings that meets or exceeds the zero energy provisions in the 2021 International Energy Conservation Code or an **equivalent stretch code**;
  - (2) to implement a plan for the jurisdiction to achieve full compliance with any building energy code adopted under paragraph (1) in new and **renovated residential and commercial buildings**, which plan shall include active training and enforcement programs and measurement of the rate of compliance each year.



# Energy Codes and Facilities Decarbonization



Source – PNNL Feb 2023 Report to Net Zero Target

# Energy Codes and Facilities Decarbonization

December 12, 2022

## Arkansas Energy Code: Arkansas Department of Energy & Environment - Division of Environmental

Covering the Future of  
DEVELOPMENT, TRANSPORTATION,  
and PUBLIC POLICY in St. Louis.



POLICY & COMMENTARY *Published* MARCH 3, 2023

### Missouri bill would prohibit enforcement of St. Louis residential energy code

by [Jessica Deem](#)  5 comments  6 min

[Download PDF](#)



Walter Wright Jr.

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# Energy Codes and Facilities Decarbonization

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## Impact on Planning-Design-Construction, and Operations Funding of Future Energy Code Adoption

- Electrification of buildings, expansion of electrical grid
- Building system efficiencies will generally require more controls, continuous commissioning, and real time analytics
- Jurisdictions are requiring performance compliance reporting, more in the future
- Onsite and off-site renewables prescribed

# Energy Codes and Facilities Decarbonization

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## Impact on Planning-Design-Construction, and Operations Funding of Future Energy Code Adoption (cont.)

- First cost of construction / renovations will increase – 10% - 20% is best guestimate of low end
- Total cost of ownership may or may not increase - TBD
- Operating cost should decrease, but operational technician required skills will increase
- Non-compliance could result in fines, penalties, or loss of Federal funding

# Energy Codes and Facilities Decarbonization

## Roadmap to Decarbonization

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### Current State Of Existing Buildings Facility Decarbonization

- Decarbonizing Of New Buildings Is Occurring Via Current Codes And Governance
- Existing Buildings Decarb Actions Are Generally Non-existent Or At Best Very Slow Progress (Re: Buildings Of 10+ Years Age)
- 90% Of US Building Inventory Is Constructed Prior To 2010\*
- Buildings Account For Approximately 40% Of US Energy Consumed\*\*
- Common Barriers For Existing Building Decarbonization Includes Lack Of Capital Funding, Replacing Existing Fossil Fuel Systems, Lacking Or Cost Prohibitive Technologies

\*US Energy Information Administration - 2018 CBECS

\*\*2012 CBECS

# Energy Codes and Facilities Decarbonization Roadmap to Decarbonization

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## The Principal Challenges for Decarbonizing Large Facilities & Campuses (non-capital)

- Challenge #1 – Large Energy Plants And Infrastructure
  - Building Level And Central Energy Plants
  - Dependence Upon Fossil Fuels (Heating And Electricity Production)
  - Electrification Of Heating – Capital And Technology Constraints
- Challenge #2 – Renewable Energy Technology Constraints
  - Land Requirements
  - Geography
  - Regulation / Governance
  - Transmission And Distribution
  - Grid Scale Energy Storage And Management

# Energy Codes and Facilities Decarbonization Roadmap to Decarbonization

---

## The Principal Challenges for Decarbonizing Large Facilities & Campuses

- Challenge #3 – Competing Demands For Energy
  - Population Growth (US And World), Immigration
  - Decommissioned Plants / Lagging New Production Plants / Aging Infrastructure
  - Transportation Electrification (EV's, grounds equipment, etc.)
  - Technology Demand For Energy (Crypto, AI, Automation, Etc.)
- Challenge #4 – Misaligned Governance Focus And Funding
  - Immediate "Wins" Vs. Intermediate And Long-term Strategies
  - Short-term Carbon Neutral Goals, Expensive Or Lacking Tech To Implement
  - Governance Costs Competes With Innovation And Capital Investments

# Energy Codes and Facilities Decarbonization Roadmap to Decarbonization

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## Strategic Roadmap for Decarbonization

- **Step 1 – Aggressive Energy Optimization of Existing Buildings**
  - Thorough retro-commissioning of energy consuming systems
    - Does not require capital replacement of existing equipment / systems
    - Potentially low capital investment with great ROI
    - Includes weatherization, de-lamping, and other basic measures
  - Optimize occupancy schedules
  - Match / coordinate energy systems operation with optimized occupancy
  - DOE, NBI case studies – 30%-40% savings is typical, +60% potential
  - 1-5 year execution schedule, approx. \$2 - \$4 / sq ft investment



# Energy Codes and Facilities Decarbonization Roadmap to Decarbonization

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## Strategic Roadmap for Decarbonization

- **Step 2 – Aggressive Space Utilization and Optimization**

- Space utilization post COVID-19 pandemic is considerably lower
- Executive / corporate directives will be required to aggressively employ consolidation of space to optimize occupancy and time-of-day utilization rates
- Deactivate unused spaces / buildings with environmental safety measures in place
- Expand energy optimization with optimized space utilization
- Year 2-4, \$0.25 - \$0.50 / sq ft investment, concurrent to **Step 1**
- Goal Of Step #1 & #2 Is Reduce EUI's < 30 kBTU / SF / Yr For General Use Buildings (Office, Non-lab Instruction, Etc.).

# Energy Codes and Facilities Decarbonization Roadmap to Decarbonization

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## Strategic Roadmap for Decarbonization

- **Step 3 – Multi-year Decarbonization Investment**
  - Leverage energy and operational savings – REQUIRES FISCAL DISCIPLINE
  - **Step 3.a** – Carbon neutral electricity production and infrastructure (transmission and distribution) investments (Year 5 – 12, \$???) Investment)
  - **Step 3.b** – Electrification of facility / campus fossil fuel systems (Year 5 – 15)
  - Investment In Local and Off-site Carbon Neutral Electricity Production

# Energy Codes and Facilities Decarbonization Roadmap to Decarbonization

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## Strategic Roadmap for Decarbonization

- **Step 4 – Advanced Technologies Implementation**
  - Goal of **Step 1** is to reduce facility EUI to less than 30 kBTU / sq ft / year. **Step 2 and Step 3** is to decarbonize the remaining energy use, i.e. go carbon neutral energy. **Step 4** will indefinitely sustain decarbonized energy leveraging emerging technologies (market viable)
  - Current emerging technologies includes -

# Energy Codes and Facilities Decarbonization Roadmap to Decarbonization

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## Strategic Roadmap for Decarbonization

### Examples Of Emerging Technologies (< 2-10 Years horizon)

- Redox-Flow Long Duration Batteries, **Graphene Technology For Energy Storage And Superconductors**, Phase Change Materials, **Photovoltaic Glass And Building Panels**, Real-Time Occupancy Measurement, **Advanced Building Membranes (Air Tightness)**, Highly Effective Thermoelectric Generators, **Micro Cooling / Heating Devices**, Continuous Air Purification Replacing Ventilation Air, **Highly Effective Kinetic Electric Generators (Leverages Human Motion Within Buildings)**, Onsite Waste Management And Recycling, **Applied Artificial Intelligence On Operations Optimization**, Advanced Predictive Maintenance, **Dynamic Shading**, Dynamic Radiant Solar Heating, **Transition To DC Electrical Buildings**, Super Insulation, **OLED Film Lighting**



# North Central Texas Council of Governments

# Thank you!

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DAVID HANDWORK, PE, CEFP

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ENTECH CONSULTING, LLC

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# Speaker Introduction

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**Liz John**

Managing Director, SPEER



# Empowering Building Operators

## Unlocking Savings Through Efficiency & Operational Maintenance Training

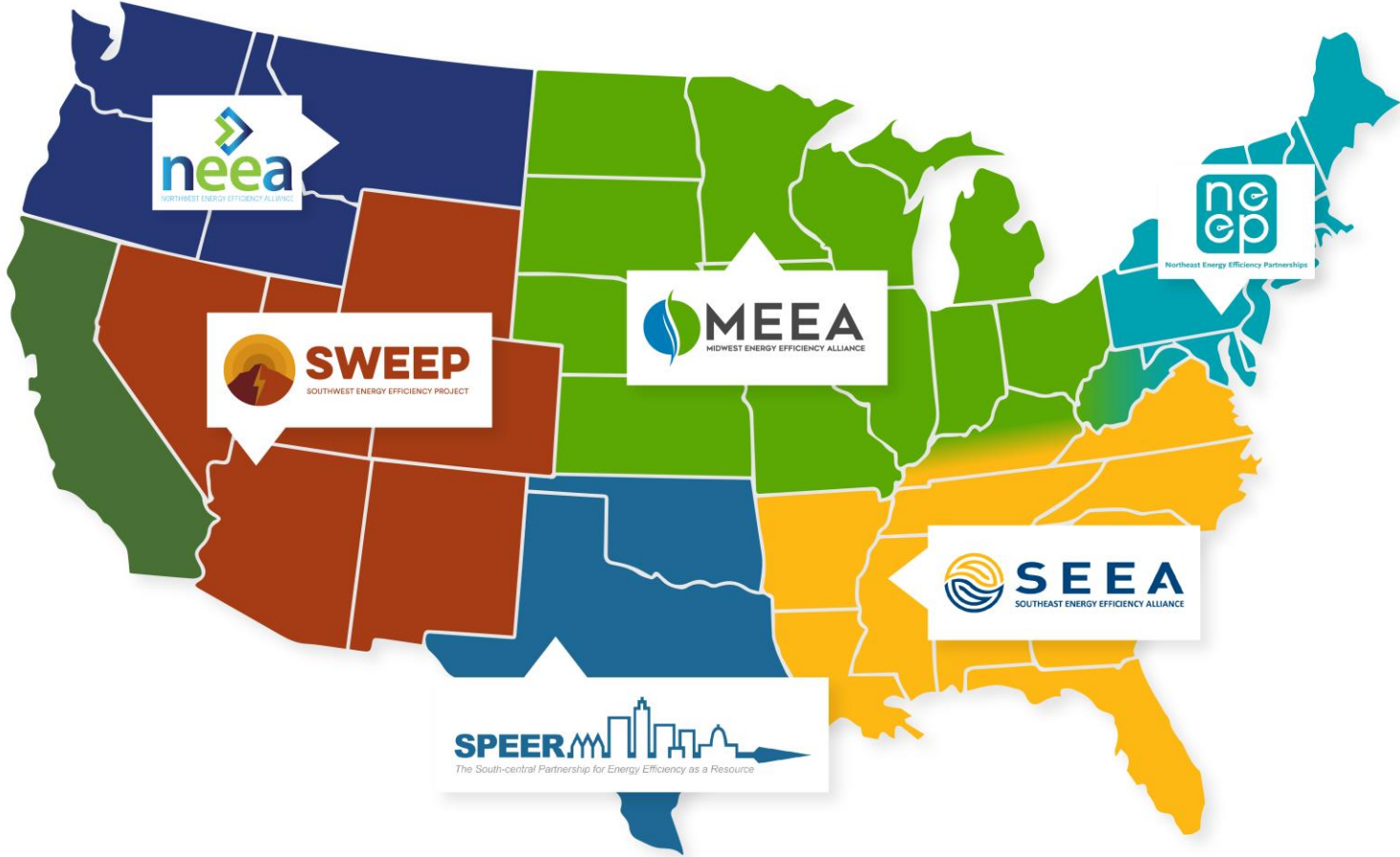


# Who is SPEER?

- SPEER is a 501(c)3 nonprofit regional energy efficiency organization (REEO)
- Territory = Texas & Oklahoma
- Mission
- Program areas:
  - Policy
  - Energy Codes
  - Local Government
  - Building Operator Certification Training
- Our members, diverse allies, & partnerships include Utilities, Municipally Owned Utilities, Retail Electric Providers, Implementors, State and Local Governments, academics to name a few.
- 60 members



# REEOs:



# Today's Agenda

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

# Building Operator Certification® (BOC)

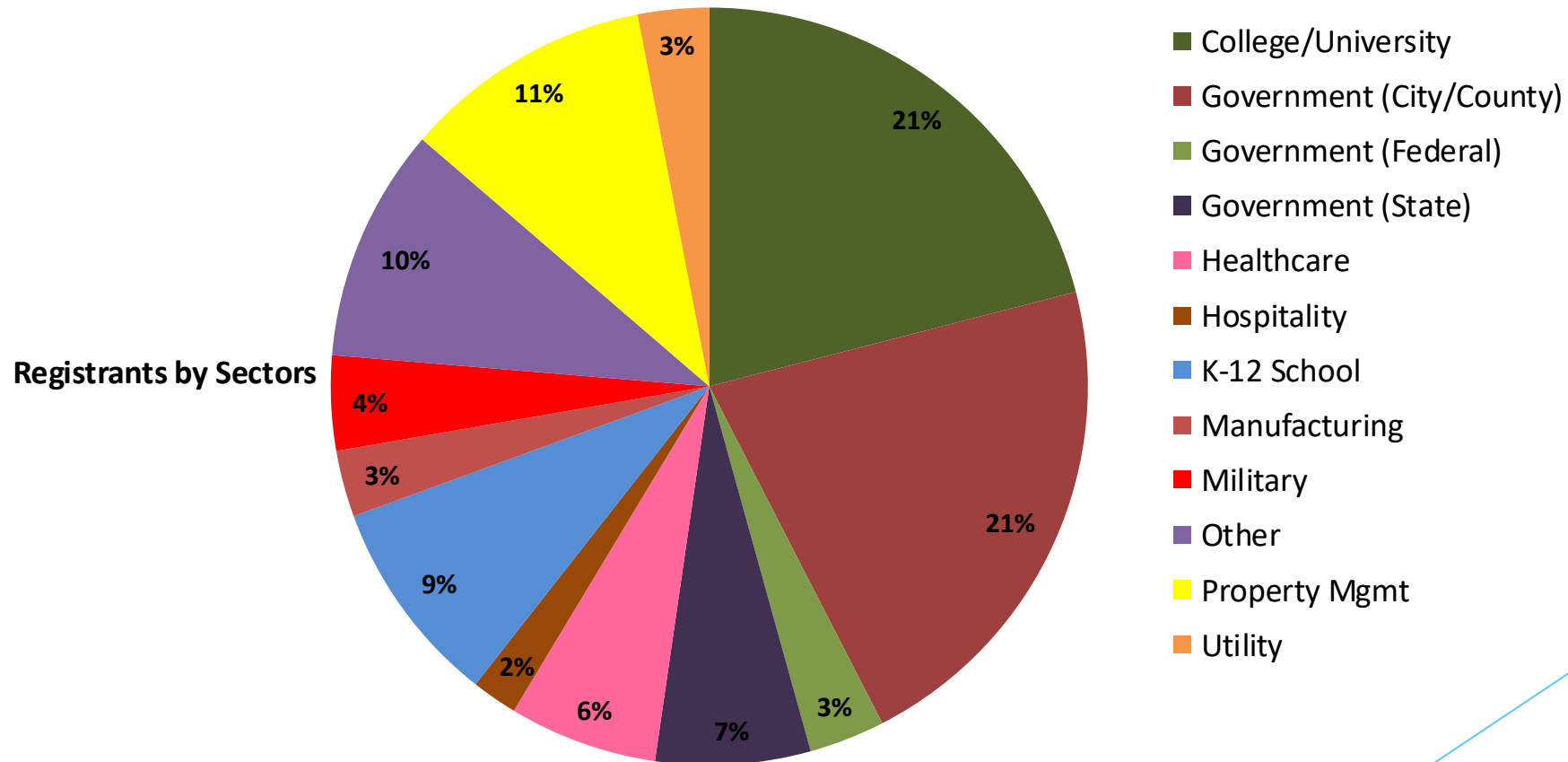
## THE ESSENTIAL CREDENTIAL

- The [BOC program](#) is a training and certification program for building engineers and maintenance & operations personnel that provides energy saving operational strategies
- Graduates gain skills to make their buildings more:
  - Comfortable
  - Efficient
  - Environmentally friendly
- Graduates help their organizations substantially cut operating costs (on average \$10,000 per year)



Photo courtesy of Resource Media

# Who attends BOC training?



YOUR BUILDING EATING  
TOO MUCH ENERGY?

# Is your building wasting energy?

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



# Verified Energy Savings

- ▶ (BOC®) has consistently produced positive documented energy savings and has proved to be cost effective.
- ▶ Since 2000, a number of BOC program sponsors have engaged independent third-party evaluators to assess and document the BOC's energy savings impacts.
- ▶ With increased reliance on energy efficiency as a resource and more utilities claiming energy savings for their BOC programs, the energy savings continue to be rigorously scrutinized.

|  | kWh                       | kW              | Therms              |
|--|---------------------------|-----------------|---------------------|
| Average Annual Savings Per Credentialed Operator   | 100,500                   | 14.5            | 1,400               |
|  | Range<br>28,600 - 181,000 | Range<br>9 - 37 | Range<br>36 - 3,104 |
| Average Savings Per Square Foot                    | 0.30                      | -               | -                   |
|  | Range<br>0.02-.50         | Range<br>-      | Range<br>-          |
| Average % Energy Savings Per Credentialed Operator | 2.5%                      | -               | -                   |

*17 independent third-party evaluators, shows that the average energy savings per participant is 100,500 kWh/annually, which equates to \$10,500 in savings*

# BOC Benefits Beyond Energy & Money Savings

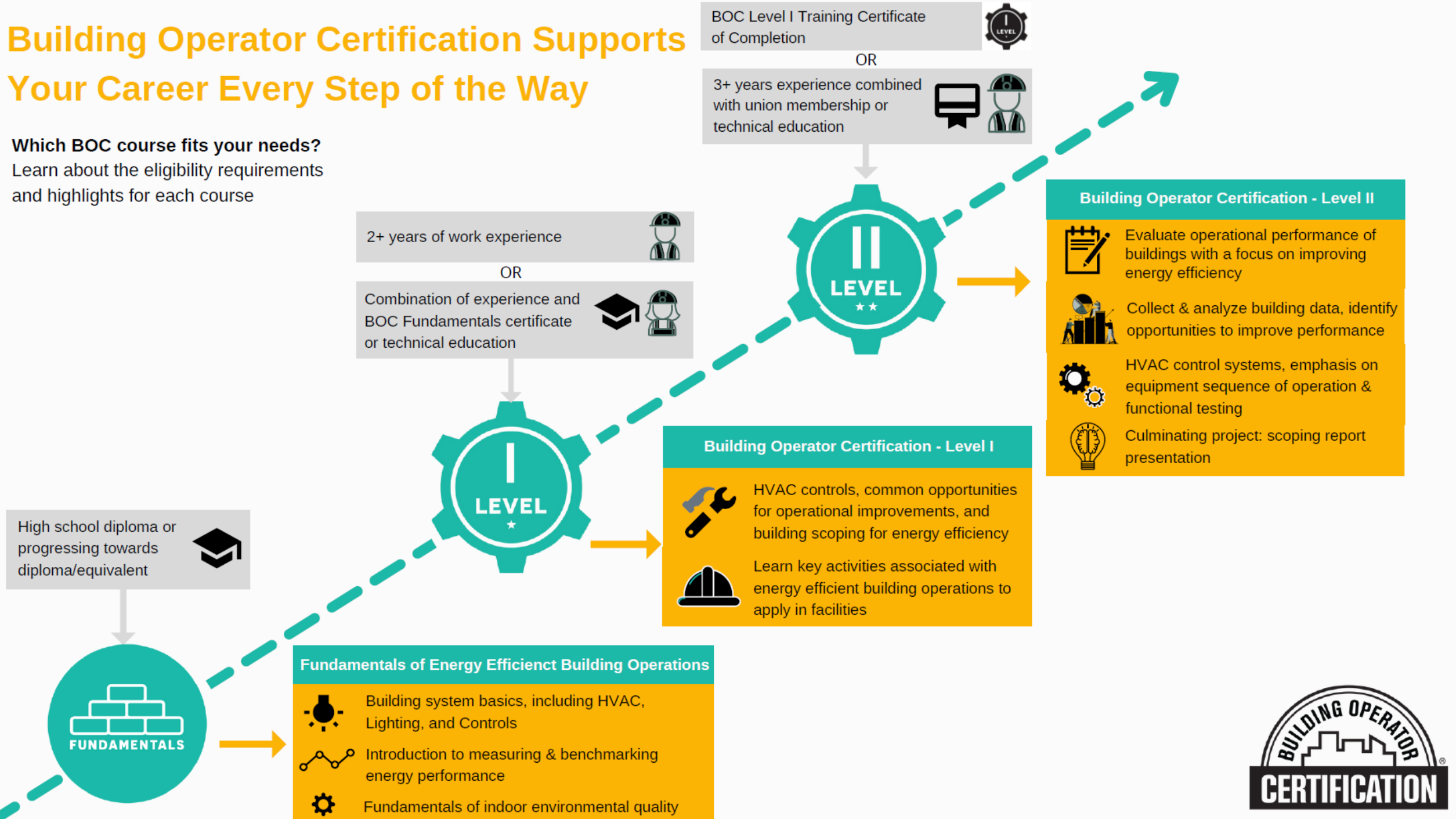



Photo courtesy of Resource Media

- Verify experience and industry knowledge
- Well trained staff that feels valued: Reduces turnover
- Enhance job opportunities
- Increase job safety
- Improve operator productivity and building performance
- Improve occupant health and comfort

# Building Operator Certification Supports Your Career Every Step of the Way




**Which BOC course fits your needs?**  
Learn about the eligibility requirements and highlights for each course




High school diploma or progressing towards diploma/equivalent 





**Fundamentals of Energy Efficient Building Operations**

-  Building system basics, including HVAC, Lighting, and Controls
-  Introduction to measuring & benchmarking energy performance
-  Fundamentals of indoor environmental quality

2+ years of work experience 


OR

Combination of experience and BOC Fundamentals certificate or technical education  





**Building Operator Certification - Level I**

-  HVAC controls, common opportunities for operational improvements, and building scoping for energy efficiency
-  Learn key activities associated with energy efficient building operations to apply in facilities





BOC Level I Training Certificate of Completion 

OR

3+ years experience combined with union membership or technical education  



**Building Operator Certification - Level II**

-  Evaluate operational performance of buildings with a focus on improving energy efficiency
-  Collect & analyze building data, identify opportunities to improve performance
-  HVAC control systems, emphasis on equipment sequence of operation & functional testing
-  Culminating project: scoping report presentation





# Fundamentals of Energy Efficient Building Operations



Part 1: Energy Efficiency and Sustainability Overview



Part 2: HVAC Fundamentals



Part 3: Lighting Fundamentals



Part 4: Energy Conservation Opportunities



Part 5: Indoor Environmental Quality



Part 6: Measuring and Benchmarking Energy Performance



Part 7: Conclusion: Putting It All Together

# 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:** 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



# Level II Classes

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



# Class 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**  
Given 1 hour to complete

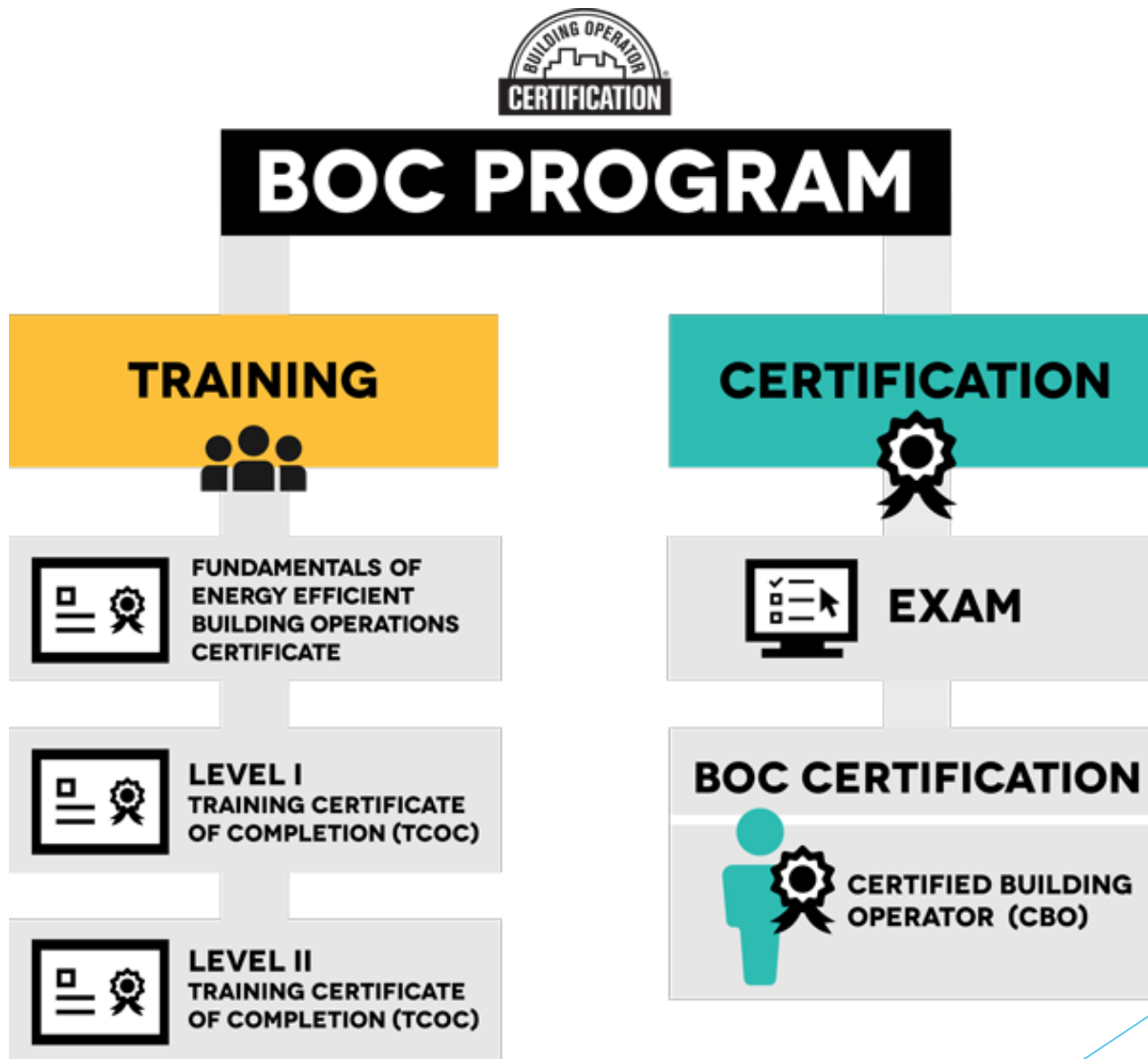
# Project Assignments

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



Photo courtesy of Resource Media

# BOC Credential Structure



# 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

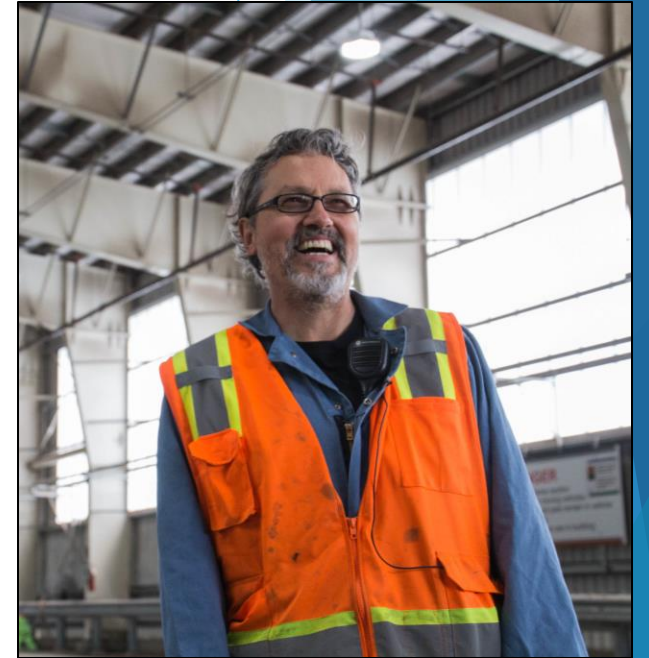


Photo courtesy of Resource Media

# 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.



# Maintaining Your BOC Credential

- ▶ National BOC team will notify you in advance
  - ▶ January of year you are due for maintenance
- ▶ Maintenance fee is \$75
- ▶ Requires 5 points each year for Level I TCOC, 10 points for Level II
- ▶ Certification auto renews with TCOC

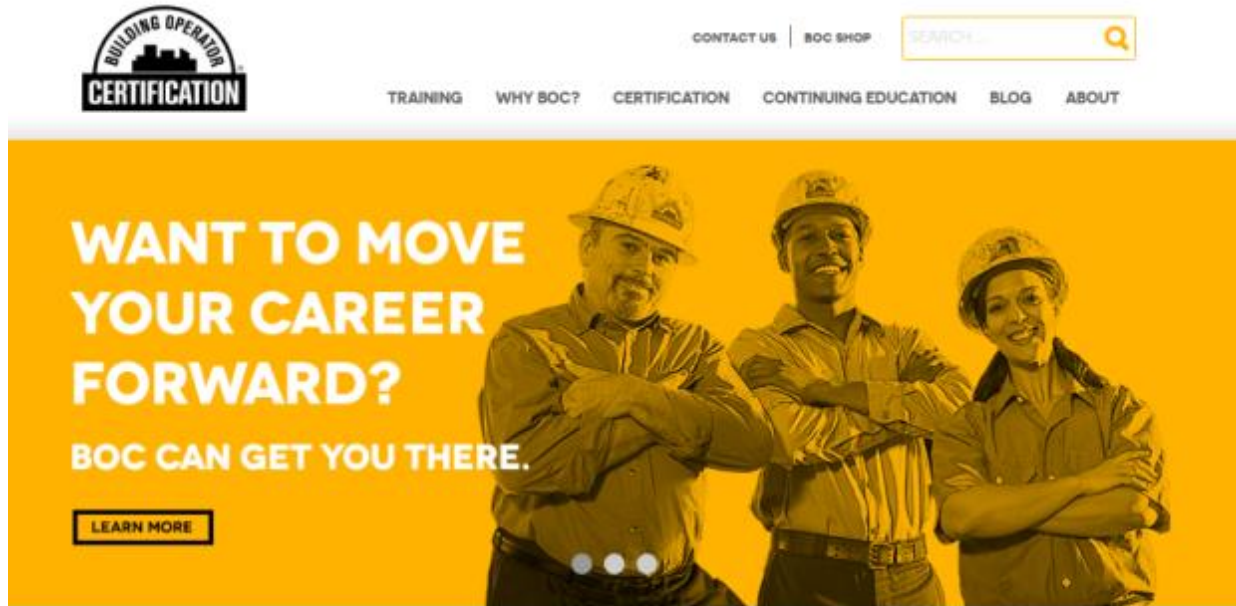
*\*Not required for Fundamentals certificate*

# Cost

- ▶ Includes
  - ▶ Technical training & Instructor fees (plus travel if in-person)
  - ▶ Student Handbooks - 7/per student
  - ▶ Project Workbook
  - ▶ Access to Learning Management System
  - ▶ Tests
  - ▶ Credential
  - ▶ Lunch (in-person)

Fees vary from \$1600 for virtual to \$1800 in-person, minimum of 10 for closed course

# 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](#)

# Funding Opportunities & Resources

- ▶ **EPA's Community Change Grants**
- ▶ **Energy Efficiency and Conservation Block Grant (EECBG):** a funding program designed to assist states, local governments, and Tribes in implementing strategies to reduce energy use, to reduce fossil fuel emissions, and to improve energy efficiency.
  - ▶ \$550,000,000 | Formula & Competitive Grants | October 31, 2024 deadline
- ▶ **Grants.gov**
- ▶ **Energy Funds for All: Workforce Development & Labor**
- ▶ Utilize local govt. allocated or end of year funding - typically end of August
  - ▶ Great time to start allocating for FY 24-25

# Speaker Introduction

---

## Jonathan Kraatz

Executive Director, USGBC Texas





TEXAS

# *Measuring Ongoing Performance*

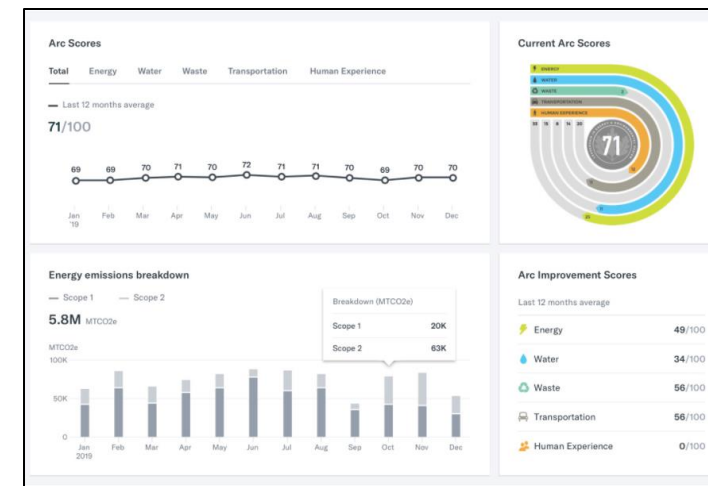
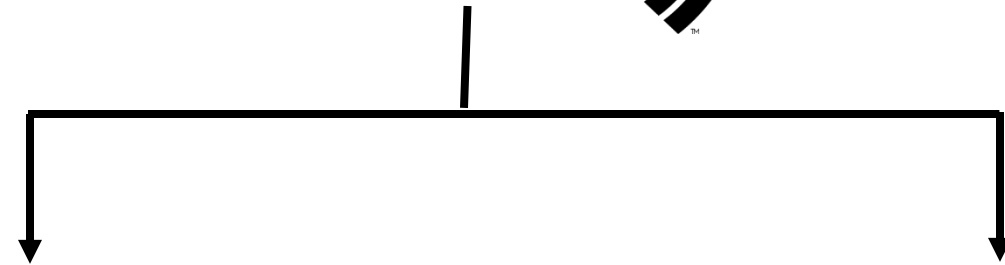
*Jonathan Kraatz  
Executive Director  
USGBC Texas*



TM

# What is Arc?

- USGBC, GBCI and Arc are an integrated family of organizations
- Arc powers LEED v4.1 O+M certification or LEED recertification
- Arc helps you track, manage and benchmark your data





# Arc Tracks Performance

## Spaces and Buildings

- **Energy and emissions:** energy, GHG intensity
- **Water:** water consumption
- **Waste:** generation and diversion
- **Transportation:** travel modes, emissions
- **Human experience:** occupant satisfaction, IAQ

LEED scores



Project data

# Partners

> 25 active connections

Linking and syncing data

Providing value-added integrations

## Partners



Energy Star Portfolio  
Manager

Pull data from your Energy Star  
Portfolio Manager account to use  
for performance scores.



Measurabl

Measure, manage and improve  
your ESG (environmental,  
governance) data.



arbnco

Interactive, digital infrastructure  
solution for monitoring indoor air  
quality, thermal comfort and  
human experience.



B-Line

B-Line is an artificial intelligence  
platform that helps green building  
owners optimize occupant  
and commuting surveys.

FGB STUDIO



NANDO



Commufiti

QLEAR



Autocase



Wattics



renteknikgroup



Schneider Electric

GREEN SPORTS ALLIANCE



MOODY'S

ESG Solutions



Bractlet



# What does Arc do?

**Score:** Score any project, anywhere at no cost

**Benchmark:** Compare projects to peers, performance standards, and custom targets

**Communicate:** Analyze, summarize, and report on performance



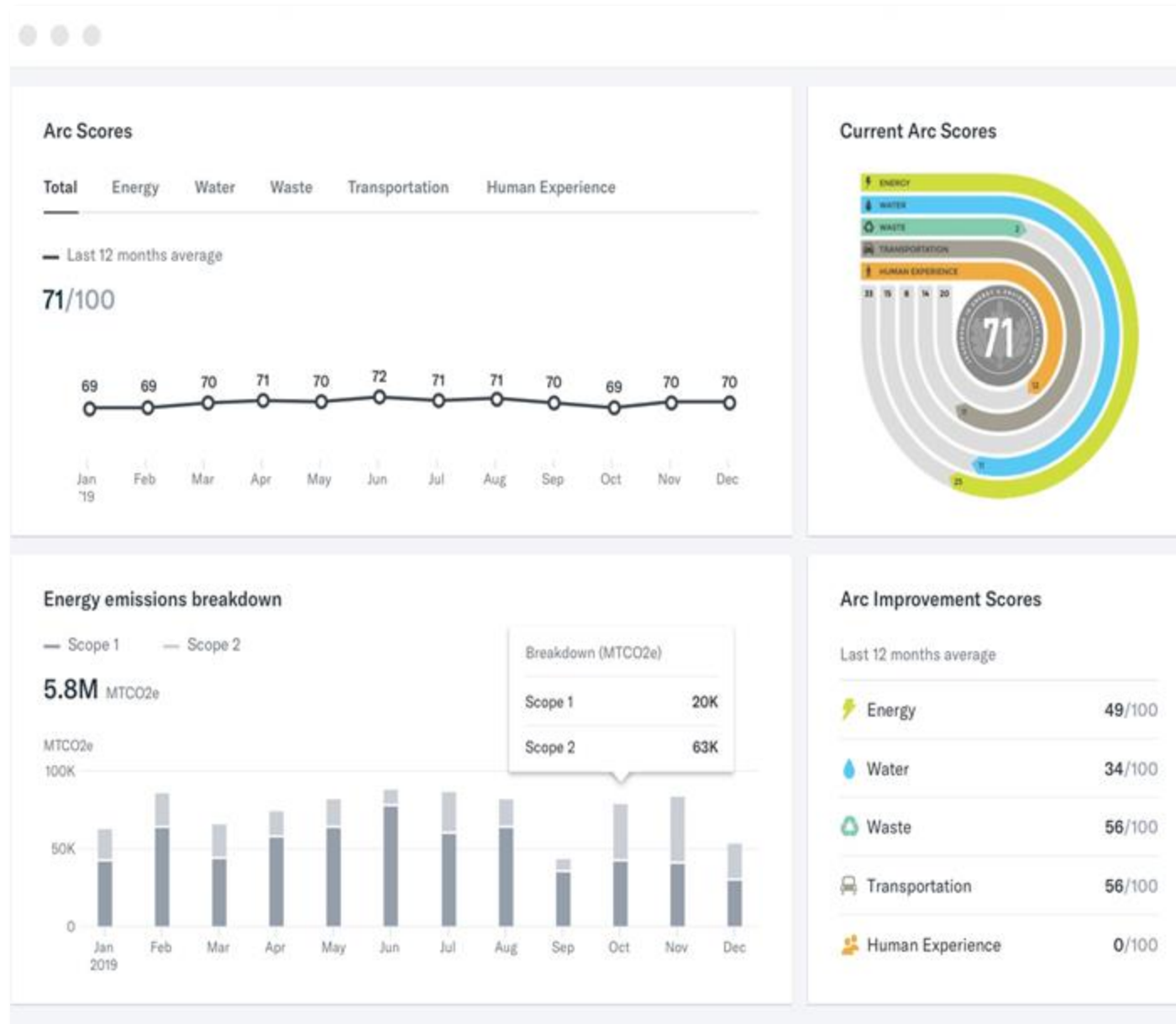
# Who uses Arc?

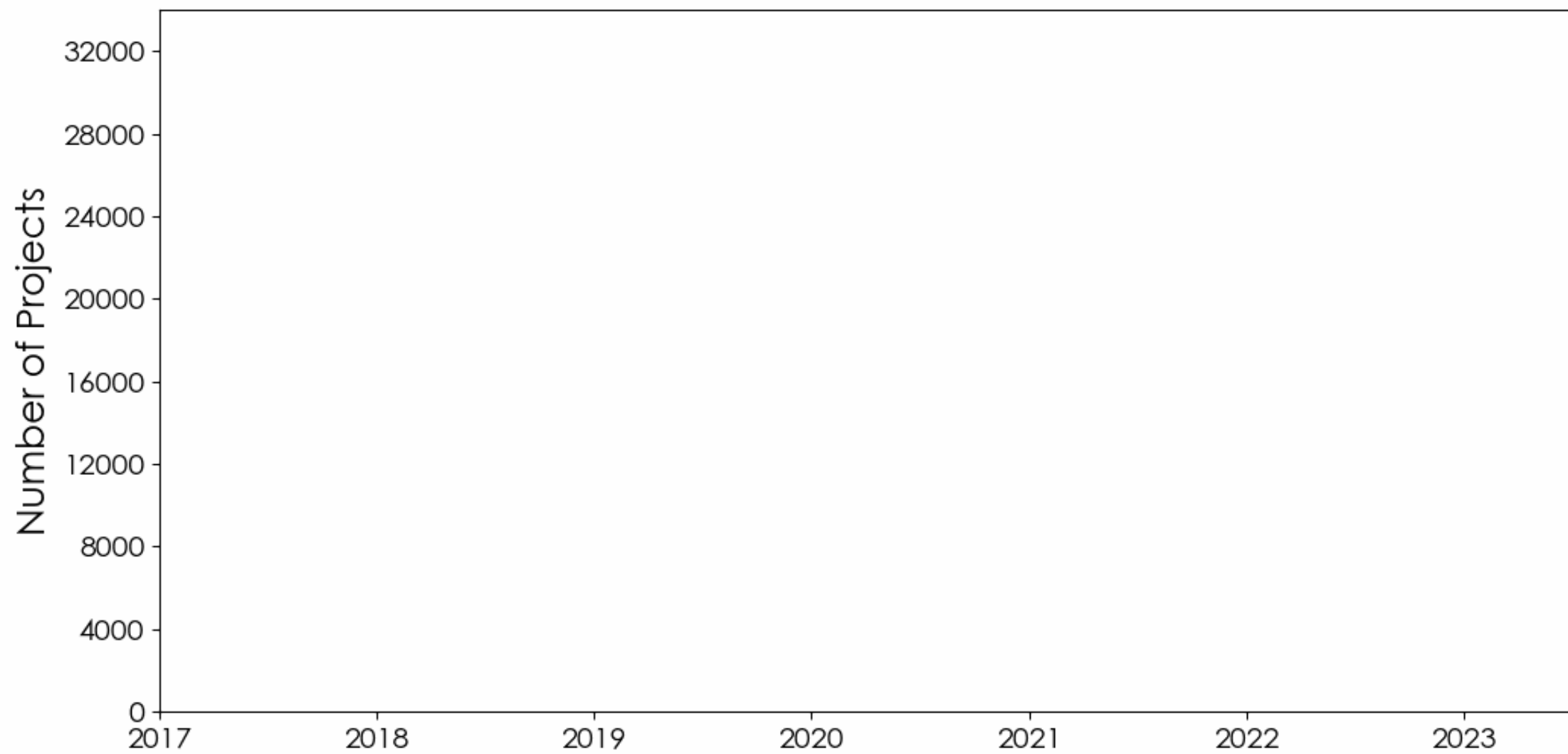
1. Facility managers
2. Corporate sustainability
3. Property companies
4. K-12 and higher education



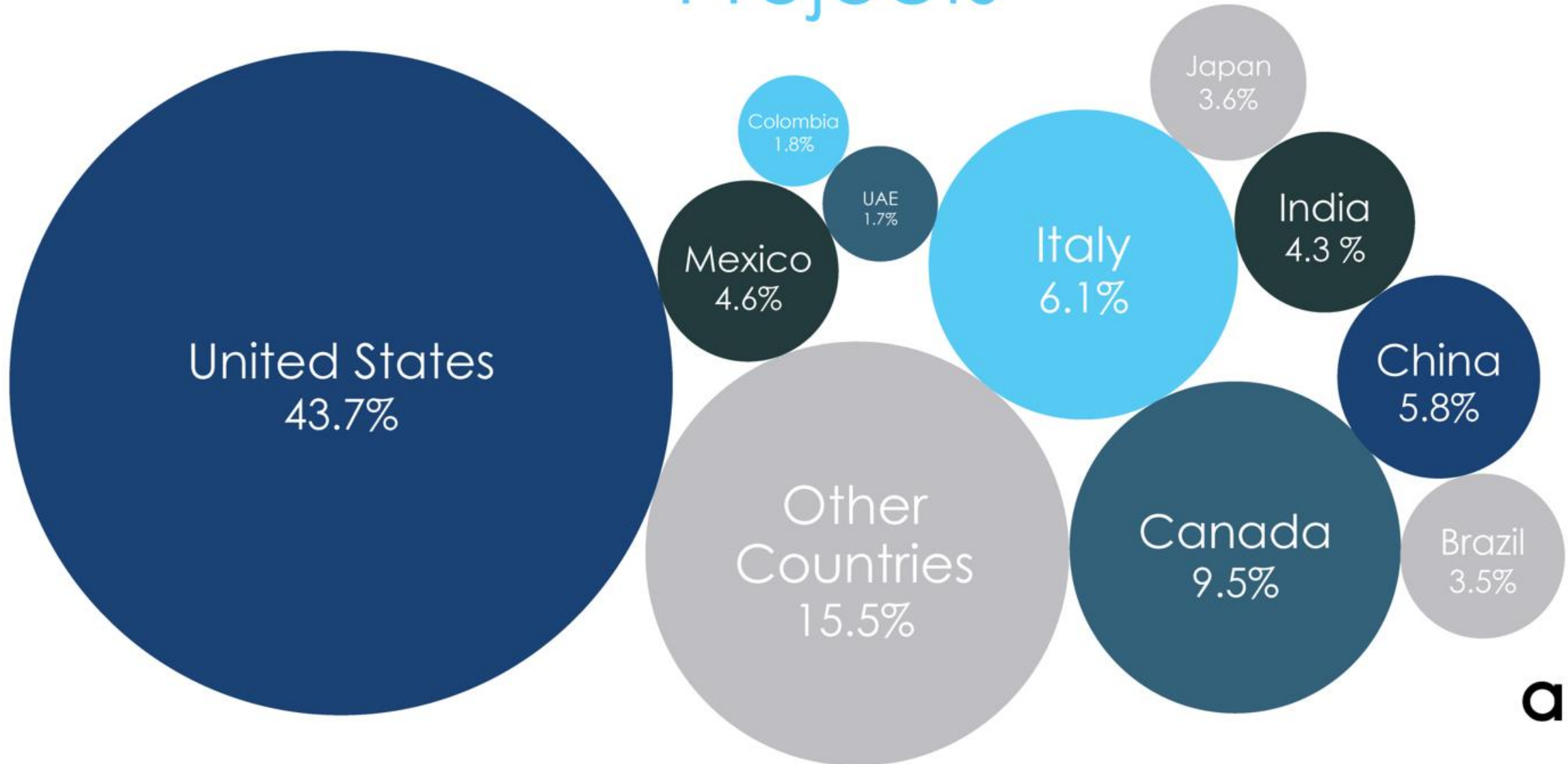
# By the Numbers

- > 20,000 active users
- > 10 billion sf
- > 250 million mTCO<sub>2</sub>e
- > 145 countries





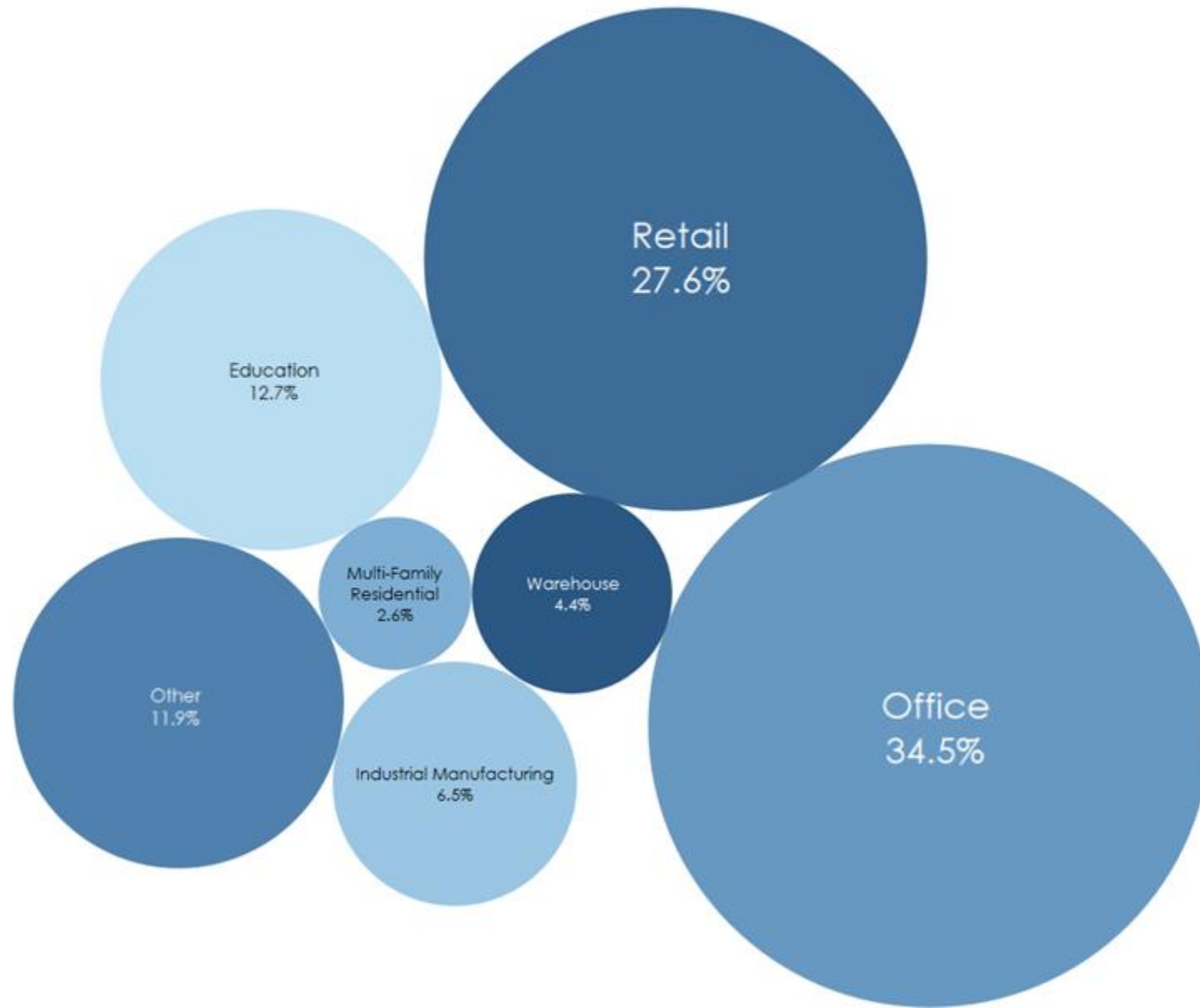
# Top Countries for Arc Projects



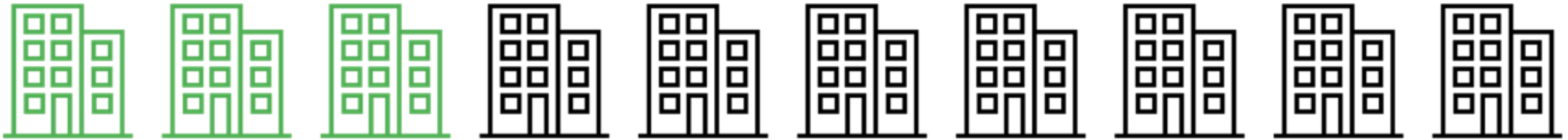


# Top Space Types in Arc

## Project Count



# LEED Certification among Arc Projects



~ 3 out of 10 are LEED Certified

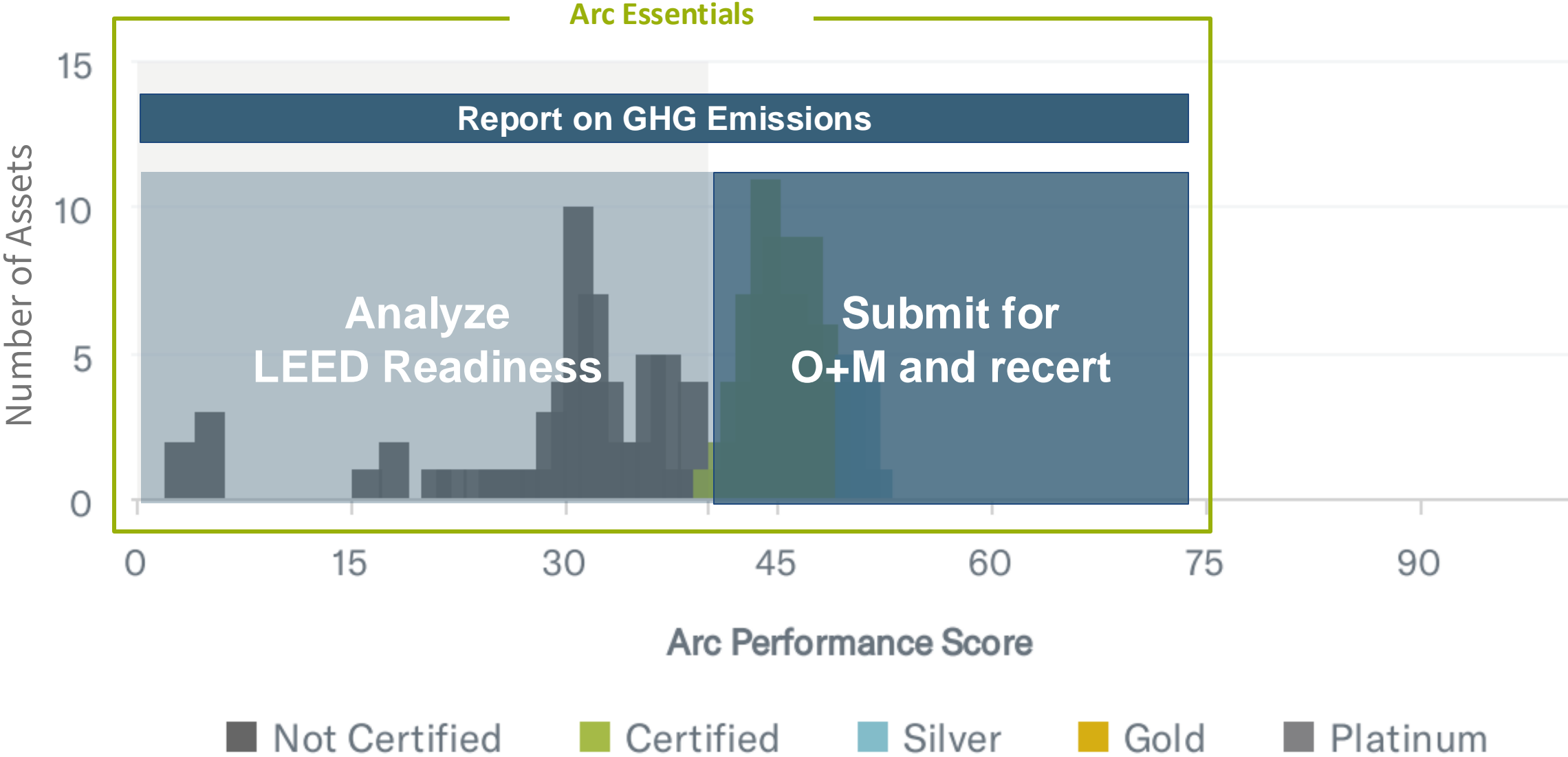
Total Building Projects in Arc: > 34,000

# How does Arc work?

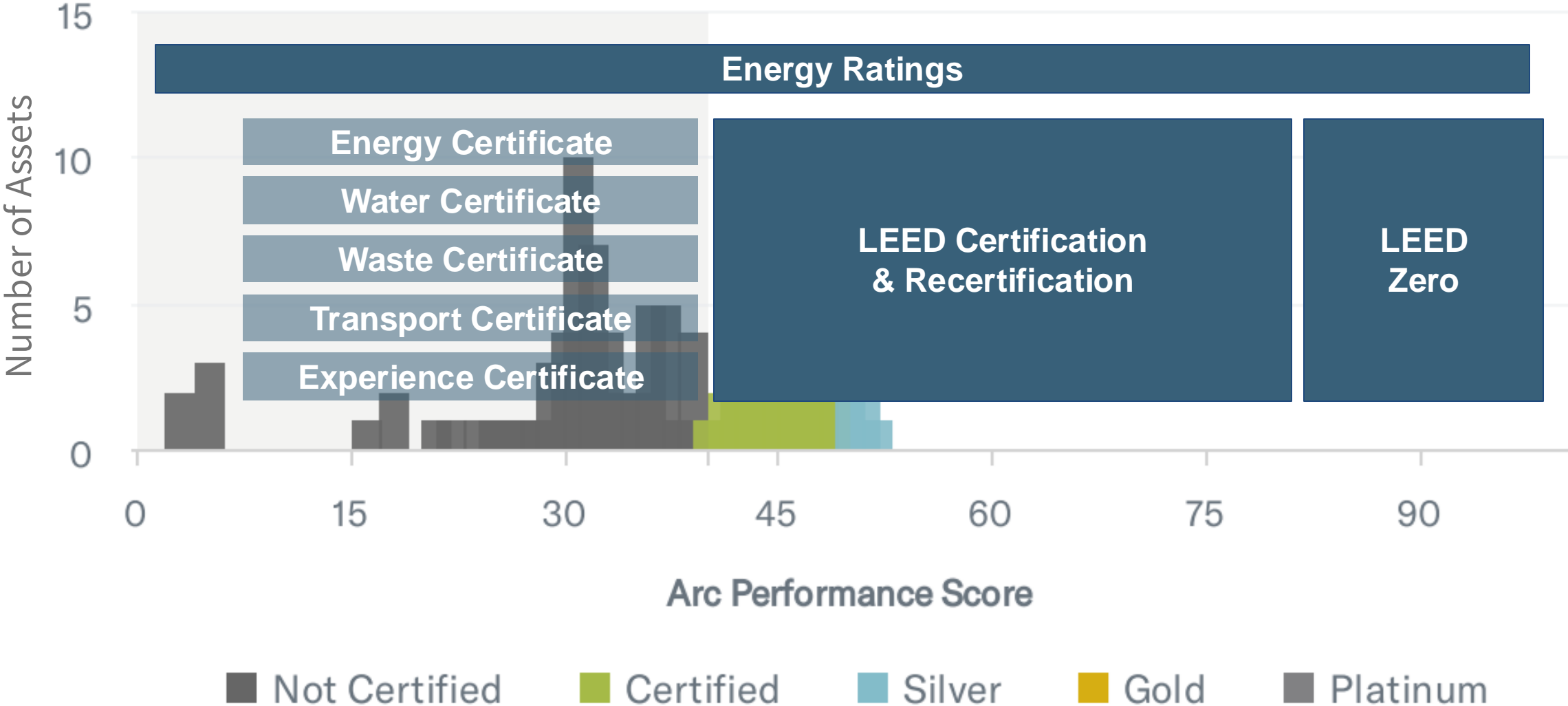
1. Load Everything - anyone, anywhere can enter information, manage data, and score projects *for free*
2. Score Anything - score one or more performance categories
3. Certify the Best - streamline LEED v4.1 certification and recertification



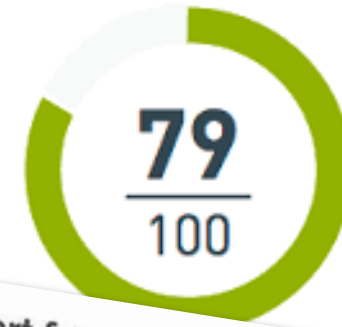
# Engage Every Asset



# Earn Recognition



# Arc supports GRESB



**GRESB Score**

**GRESB Average 66**

- Operational building certifications
- Energy ratings
- Risk assessments
- Waste management
- Employee health and well-being
- Tenant satisfaction
- Tenant engagement
- Portfolio targets

Summary of Arc support for 2022 GRESB indicators

| GRESB Indicators                             | Arc Solution  | Notes  |
|--|---|--|
| Operational building certifications (BC 1.2) | LEED O+M certification<br>LEED Recertification<br>LEED Zero | No documentation reported as a percentage area covered<br><br>Note: GRESB participants can earn more points by using LEED "building certification" at the time of design/construction. Pursue "operational building certifications" using performance based recertification. |
| Operational building certifications (BC 1.2) | ≥3 Performance Certificates                                 | Assets with three or more Performance Certificates can earn "partial" coverage recognition for operational building certification.   |



# Arc Supports GRESB Participants

## 2023 Update

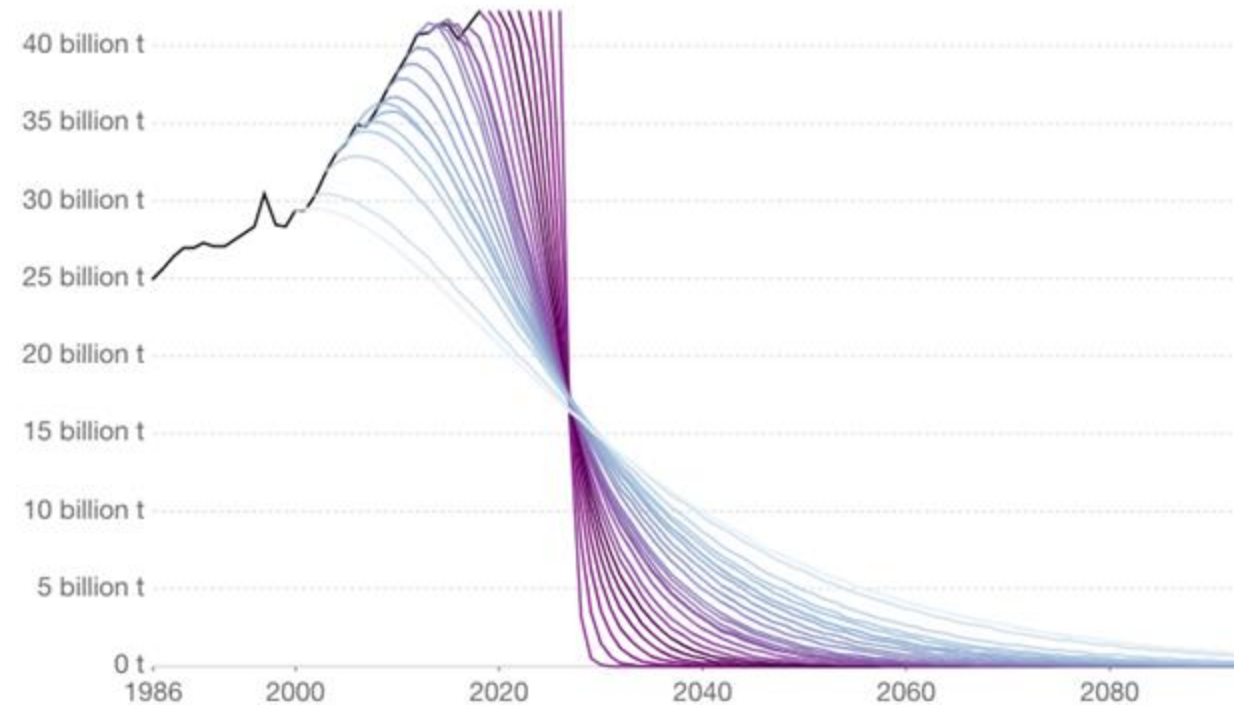


[GRESB](#) is the global benchmark for the environmental, social, and governance (ESG) performance of real asset companies and funds. Many partners help GRESB participants organize and submit data. Arc works on the other side of the GRESB process; **Arc helps companies and funds use performance-based green building to achieve higher GRESB scores.**

# Market Transformation

**Challenge:** States, cities and communities need to improve building performance to meet emission reduction goals

**Solution:** Benchmarking and Building Performance Standards



Source: Robbie Andrews (2019); based on Global Carbon Project & IPCC SR15  
Note: Carbon budgets are based on a >66% chance of staying below 1.5°C from the IPCC's SR15 Report.  
OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY





# Using custom targets in Arc Advanced Scoring

Author: Kristina Koh

Published on: Thursday, December 8, 2022



Arc Advanced Scoring: Custom Targets Walkthrough

Arc Skorv, Inc. 161 subscribers Subscribed

3 Share Download ...

## Create a Custom Target

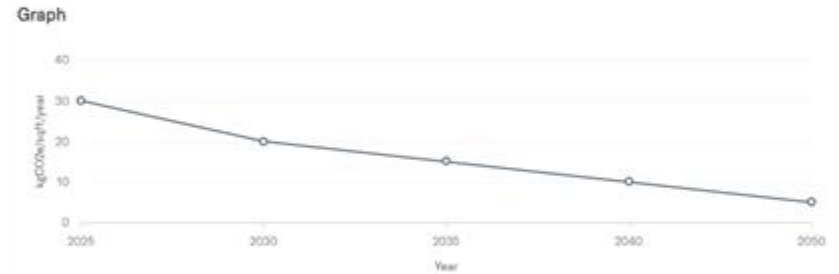
Name  
Sample Custom Target

Performance Indicator  
GHG intensity

Unit  
kgCO2e/sqft/year

Description  
This is a sample custom target

Target Type  
Linear



| Year | Target |
|------|--------|
| 2025 | 30     |
| 2030 | 20     |
| 2035 | 15     |
| 2040 | 10     |
| 2050 | 5      |

Add A Row

Create Custom Target

Cancel

# Efficiency Analysis

*Available now:*

- Understand efficiency over time
- Analyze energy end uses
- Control for weather

Life Is On

**Schneider**  
Electric

# Efficiency Analysis

## Track Performance

*Understand current energy usage and efficiency and modeled monthly energy end uses*

## Analyze Efficiency

*Analyze changes in heating and cooling efficiency across the range of observed temperatures*



# Efficiency Analysis

## Take Action

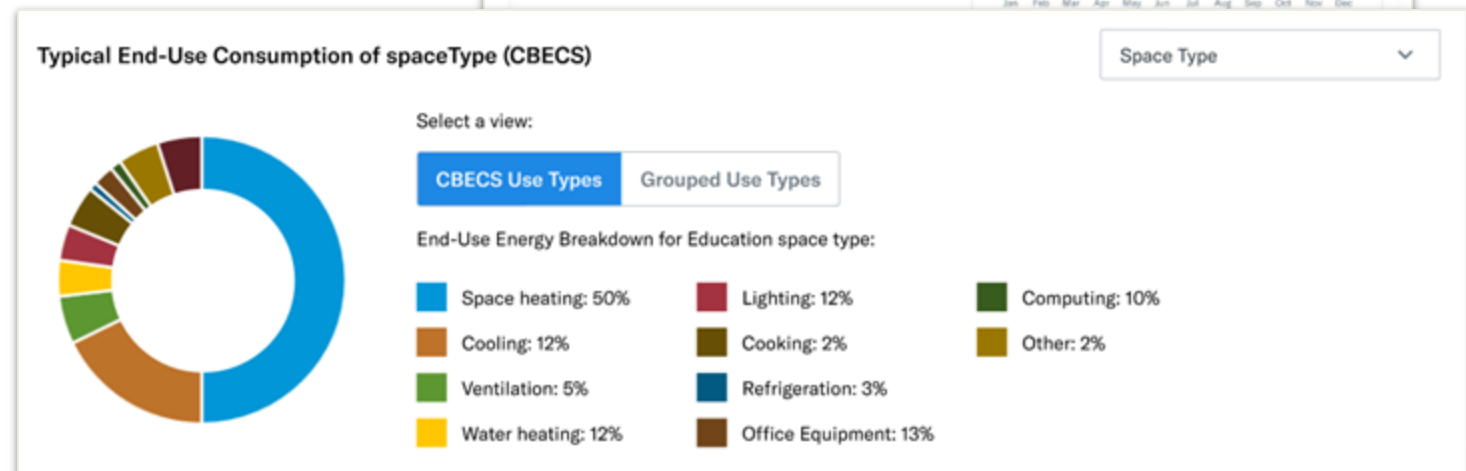
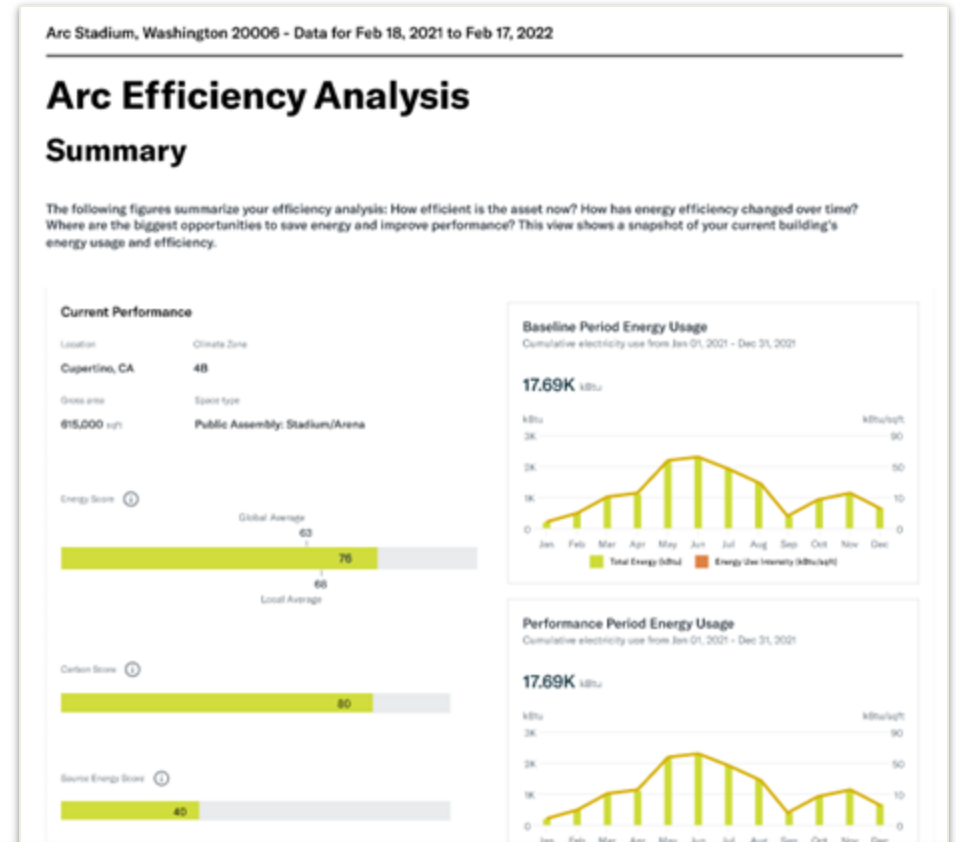
*Prioritize changes needed to improve energy efficiency*

## Score

*Determine LEED score impact*

## Report

*Communicate efficiency*

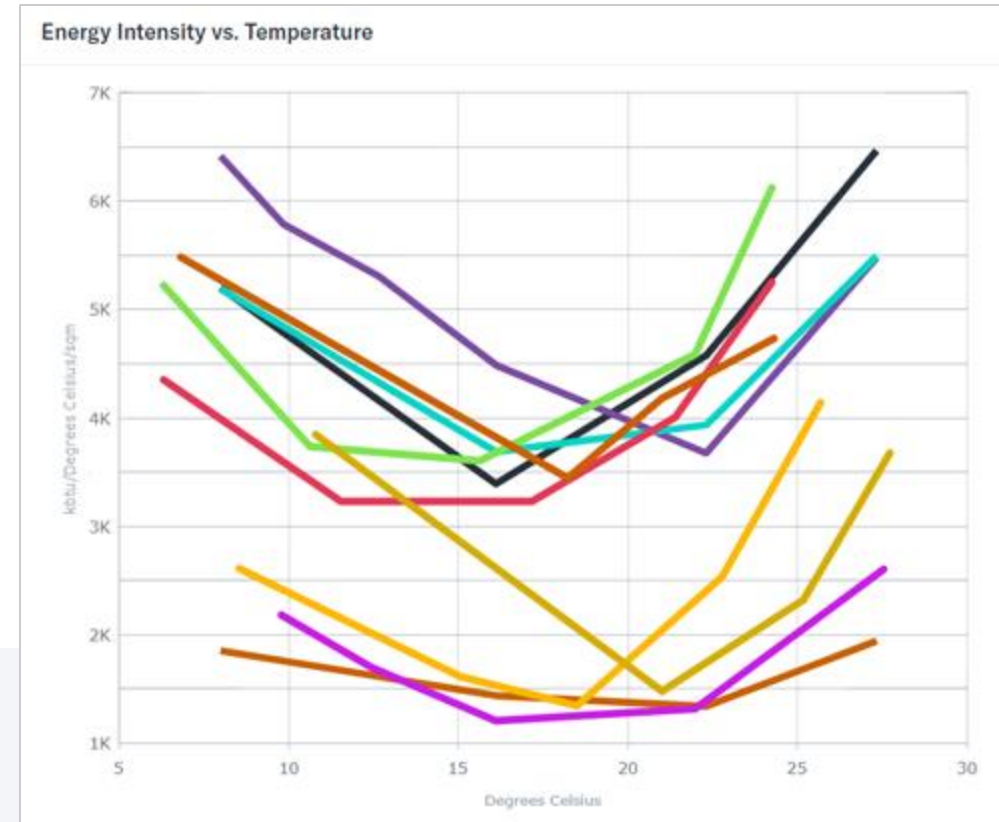
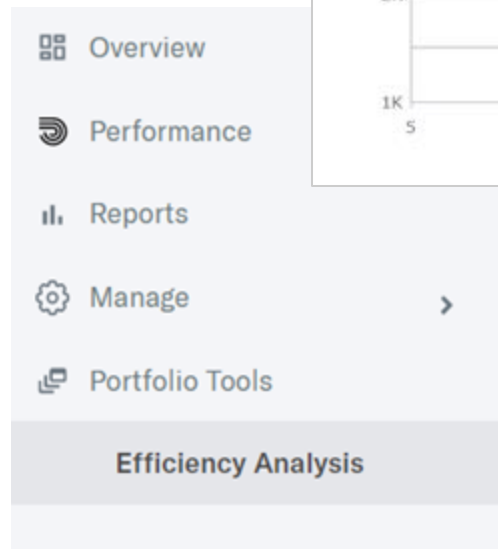


# Efficiency Analysis

## Portfolio Tool

*Analyze efficiencies of up to 10 projects at a time*

*Evaluate best and worst performing assets and prioritize recognition or improvements*



# Green Building & EU Taxonomy

- LEED addresses most EU Taxonomy requirements
- Taxonomy also introduces unique requirements

## LEED and the EU Taxonomy

A whitepaper on how LEED supports various European Union policies including the EU Taxonomy, a critical component of the EU green deal  
January 2022



# Arc EU Taxonomy Self-Assessment

- Collects and organizes data
- Assesses Taxonomy alignment
- Earns a new LEED Pilot Credit

The screenshot shows the Arc EU Taxonomy Self-Assessment tool interface. The top navigation bar includes 'Home', 'Projects', 'Portfolios', and 'Insight'. The main content area is titled 'European Union Sustainable Finance Taxonomy' and includes a section 'What is the European Union Sustainable Finance Taxonomy?' with a five-step process:

- Select a project type and enter basic information.
- Document at least one environmental objective.
- Document all "do no significant harm" criteria.
- Document all "minimum safeguard".
- Generate an alignment report.

Below this is a 'Project Surveys' table:

| Date last changed        | Survey Type                                  | Percentage |
|--------------------------|--|------------|
| Apr 20, 2023 at 07:59 PM | New Construction                             | 15%        |
| Apr 20, 2023 at 10:15 PM | Existing Construction (Before Dec 31st 2020) | 100%       |

The left sidebar contains a navigation menu with the following items: Overview, Performance, Data, Models, Project Tools, Advanced Scoring, Performance Certificates, Climate Risk, Play to Zero, Financial Models, Re-Entry, LEED Certifications, EU Taxonomy (highlighted), and Efficiency Analysis.

# How it works

- Select a project type
- Project information
- Environmental objective
- Do no significant harm
- Minimum safeguards

### Select a Survey Type ×

---

**New Construction**  
Select this option if your construction has only just begun. [Choose](#)

**Existing Construction (Before Dec 31st 2020)**  
Select this option if your construction was completed before the EU Taxonomy cutoff date. [Choose](#)

**Existing Construction (After Dec 31st 2020)**  
Select this option if your construction was completed after the EU Taxonomy cutoff date. [Choose](#)

**Renovation**  
Select this option if your construction has recently started a renovation project. [Choose](#)



# Download

- Certificate
- Report
- Documentation



# Climate Risk

Powered By **MOODY'S** | ESG Solutions

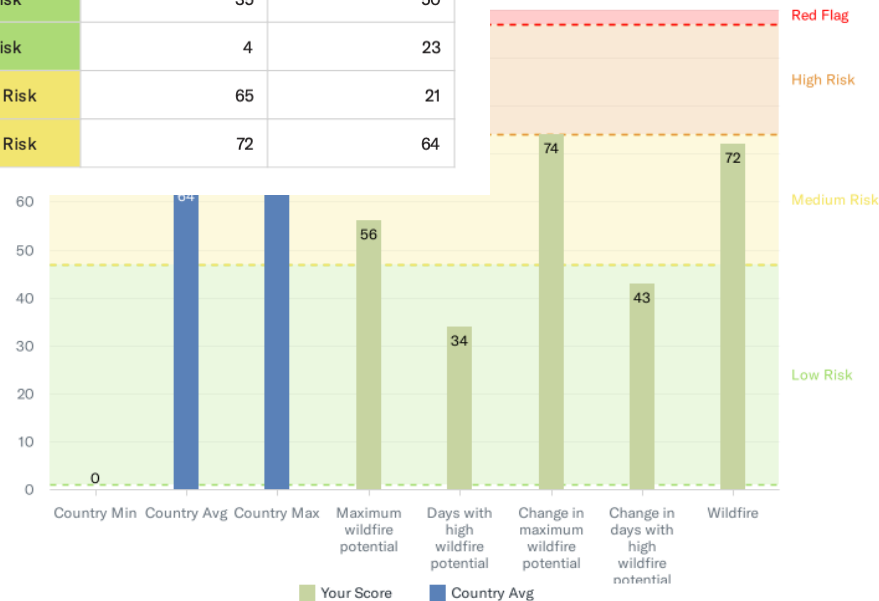
Supports **GRESB** and **TCFD**  
Criteria against 7 hazards.

## Summary Findings

Assessment Date: Mar 01, 2022  
Benchmark: Four Twenty Seven  
Methodology: 2021.1

| Climate Hazard          | Risk Level  | Site Score | Country Benchmark |
|-------------------------|-------------|------------|-------------------|
| Heat Stress             | Medium Risk | 45         | 65                |
| Water Stress            | Medium Risk | 40         | 59                |
| Sea Level Rise          | Low Risk    | 40         | 6                 |
| Hurricanes and Typhoons | Low Risk    | 35         | 50                |
| Floods                  | Low Risk    | 4          | 23                |
| Earthquakes             | Medium Risk | 65         | 21                |
| Wildfire                | Medium Risk | 72         | 64                |

|          | Site Score | Country Benchmark |
|----------|------------|-------------------|
| Wildfire | 72         | 64                |



### 1 HEAT STRESS

Energy Demand  
Extreme Temperature  
Extreme Heat Days

### 5 FLOODS

Energy Demand  
Extreme Temperature  
Extreme Heat Days

### 2 WATER STRESS

Water Supply Change  
Water Demand Change  
Water Supply Future  
Water Demand Future  
Interannual Variability

### 6 EARTHQUAKES

Water Supply Change  
Water Demand Change  
Water Supply Future  
Water Demand Future  
Interannual Variability

### 3 SEA LEVEL RISE

Absolute Coastal Flood  
Frequency  
Relative Change Coastal Flood  
Frequency

### 7 WILDFIRES

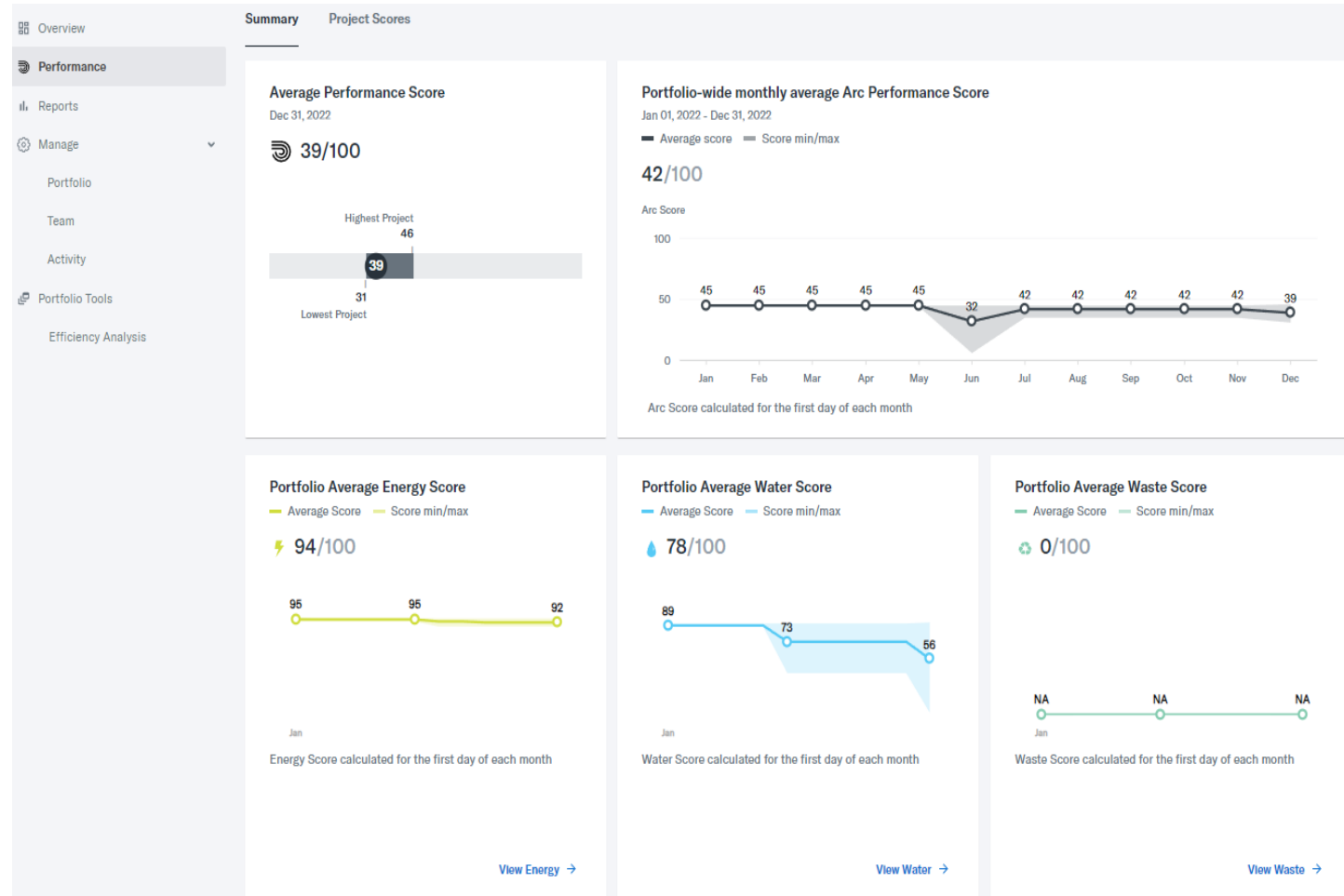
Maximum Wildfire Potential  
Days with High Wildfire Potential  
Change in Maximum Wildfire  
Potential  
Change in Days with High Wildfire  
Potential

### 4 HURRICANES & TYPHOONS

Cumulative Wind Speed

# Portfolio Tools

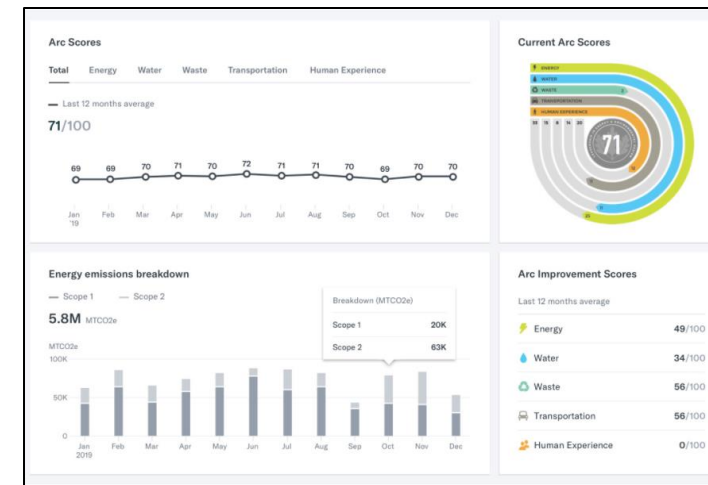
- GRESB Import + Indicators
- Benchmarking, BPS & Custom Targets
- Climate Risk
- Efficiency Analysis
- EU Taxonomy
- Performance Certificates
- LEED O+M Readiness





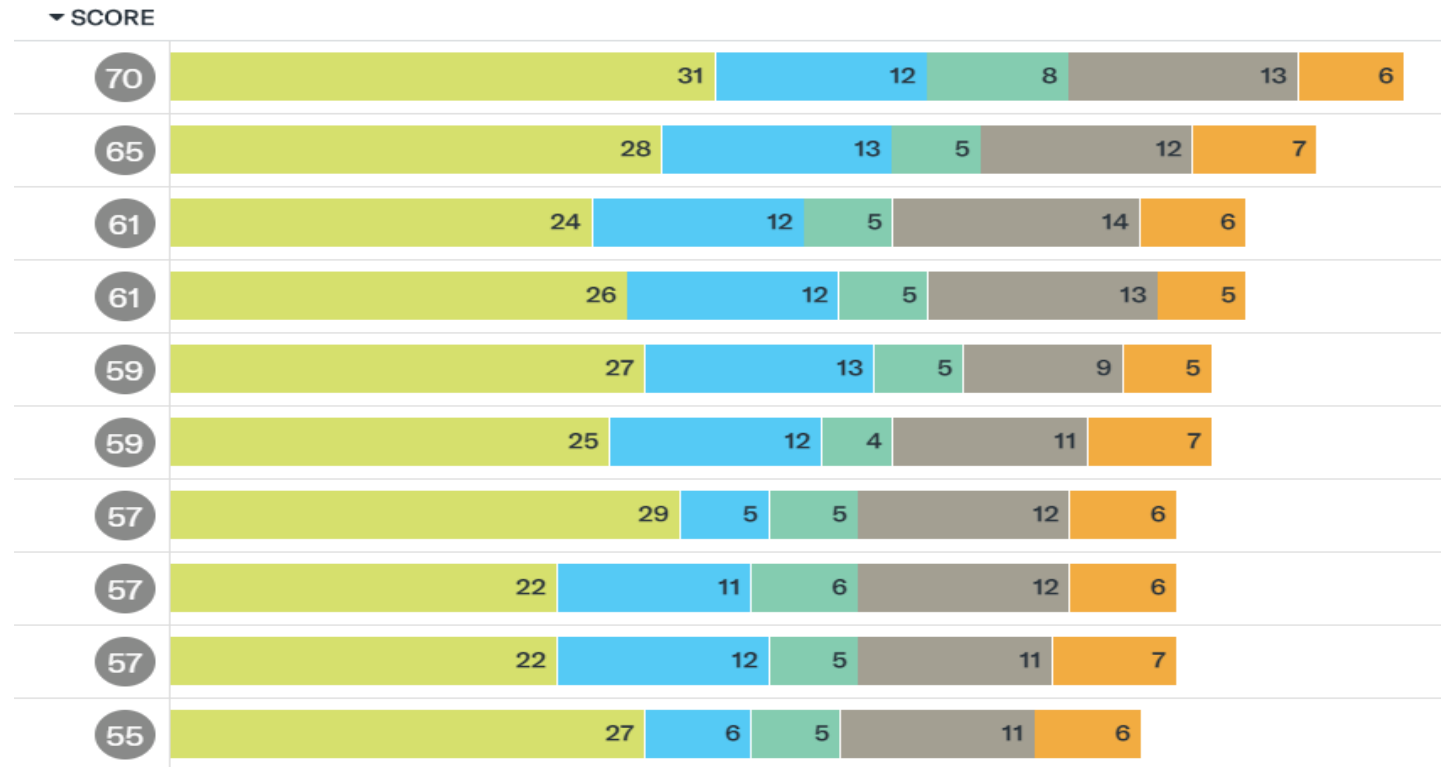
# Arc pathways

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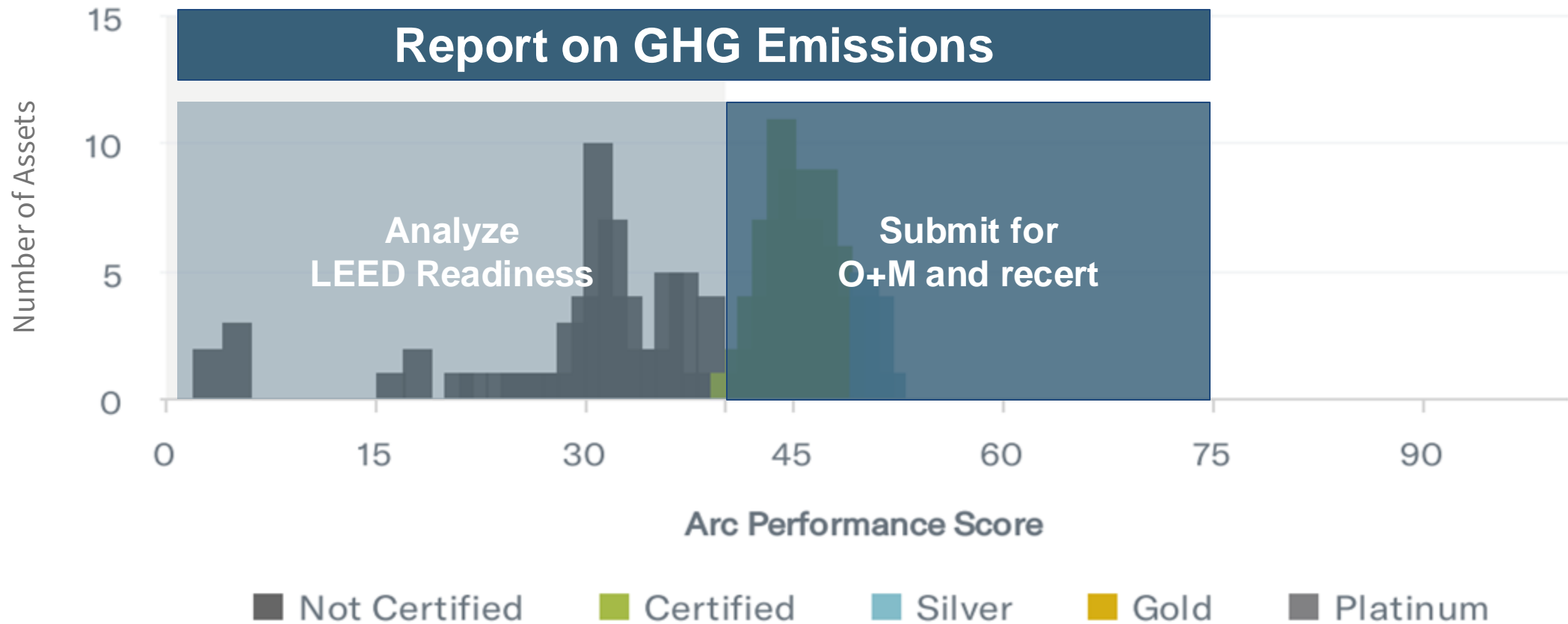


# Portfolio Tools

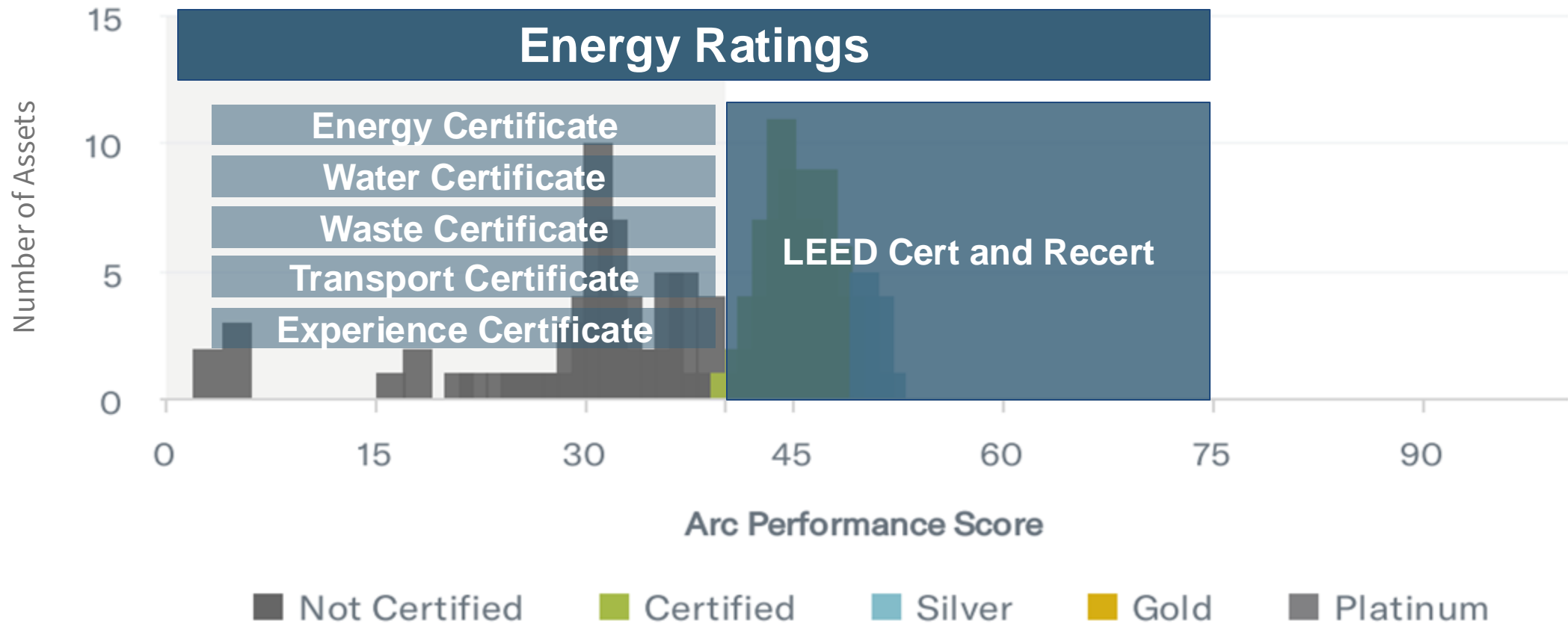
- LEED Readiness
- Performance Certificates
- GRESB Improvement
- Advanced Scoring
- Climate Risk
- Efficiency Analysis
- Connected Services
- EU Taxonomy



# LEED Readiness



# Performance Certificates





# GRESB Improvement

- Operational building certifications
- Energy ratings
- Risk assessments
- Waste management
- Employee health and well-being
- Tenant satisfaction
- Tenant engagement
- Portfolio targets



**GRESB Score**  
GRESB Average 66

Summary of Arc support for 2022 GRESB indicators

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| Operational building certifications (BC 1.2) | ≥3 Performance Certificates                                 | Assets with three or more Performance Certificates can earn "partial" coverage recognition for operational building certification.  |

# Advanced Scoring

- Compare to benchmarks and Building Performance Standards
- Create custom energy and emissions targets
- Apply targets to multiple projects

**Create a Custom Target**

Name  
Sample Custom Target

Performance Indicator: GHG Intensity Unit: kgCO2e/sqft/year

Description  
This is a sample custom target

Target Type  
Linear

Graph

kgCO2e/sqft/year

Year

| Year | Target |
|------|--------|
| 2025 | 30     |
| 2030 | 20     |
| 2035 | 15     |
| 2040 | 10     |
| 2050 | 5      |

Add A Row

Create Custom Target Cancel

# Climate Risk

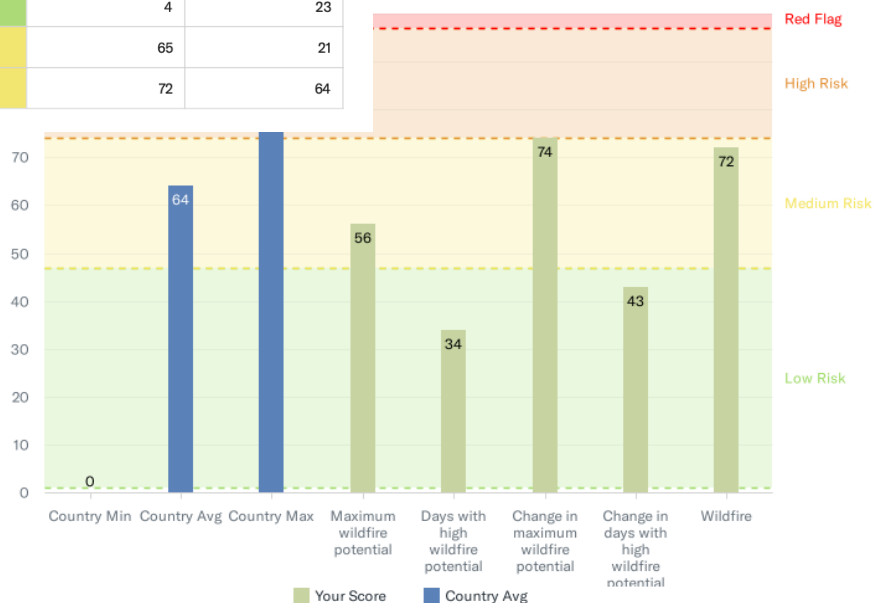
Powered By **MOODY'S** | ESG Solutions

## Summary Findings

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 Change in Maximum Wildfire  
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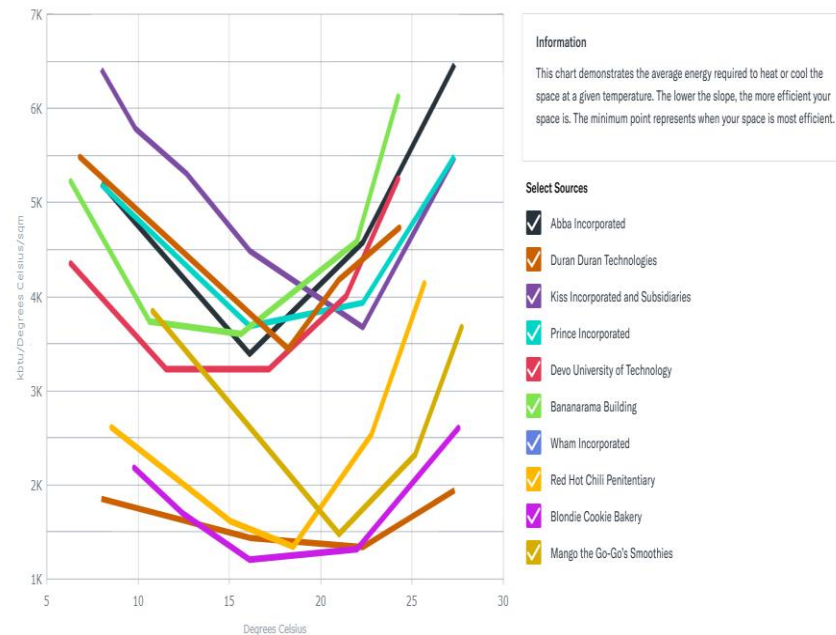
# Efficiency Analysis

Powered By 

- Track Performance
- Analyze Efficiency
- Take Action
- Score
- Report



Energy Intensity vs. Temperature



# Connected Services

Powered By 

- Automated project set up
- Automated data flow
- Arc Essentials
- Performance Certificates

## Arc Connected Services by EcoStruxure



### Arc Connected Services by EcoStruxure

[Get Started](#)

Receive access to Arc's Performance Certificates and Arc Essentials tools. Performance Certificates provide recognition of your project's performance in individual Arc categories. Arc Essentials gives you tools and features for deeper analysis and comparison of your performance for all of your projects.

- Benchmark your project against your portfolio, it's peers or building performance standards and global frameworks
- Create what-if scenarios to model performance improvement
- Identify LEED Readiness for all of your projects
- Display an Arc Performance Score
- Display an Arc Improvement Score
- Display category-specific Key Performance Indicators

# EU Taxonomy

- Select a project type
- Complete project information
- Report environmental objectives
- Respond to Do No Significant Harm criteria
- Affirm compliance with Minimum Safeguards
- Download your report and certificate

The image shows a screenshot of the Arc Scoring Demonstration Project interface. The top navigation bar includes 'Home', 'Projects', 'Portfolios', and 'Insight'. The main content area is titled 'European Union Sustainable Finance Taxonomy' and includes a section 'What is the European Union Sustainable Finance Taxonomy?' with a five-step process:

- Select a project type and enter basic information.
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- Document all "minimum safeguard" criteria.
- Generate an alignment report.

A dialog box titled 'Select a Survey Type' is overlaid on the screen, providing four options:

- New Construction**: Select this option if your construction has only just begun. [Choose]
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- Existing Construction (After Dec 31st 2020)**: Select this option if your construction was completed after the EU Taxonomy cutoff date. [Choose]
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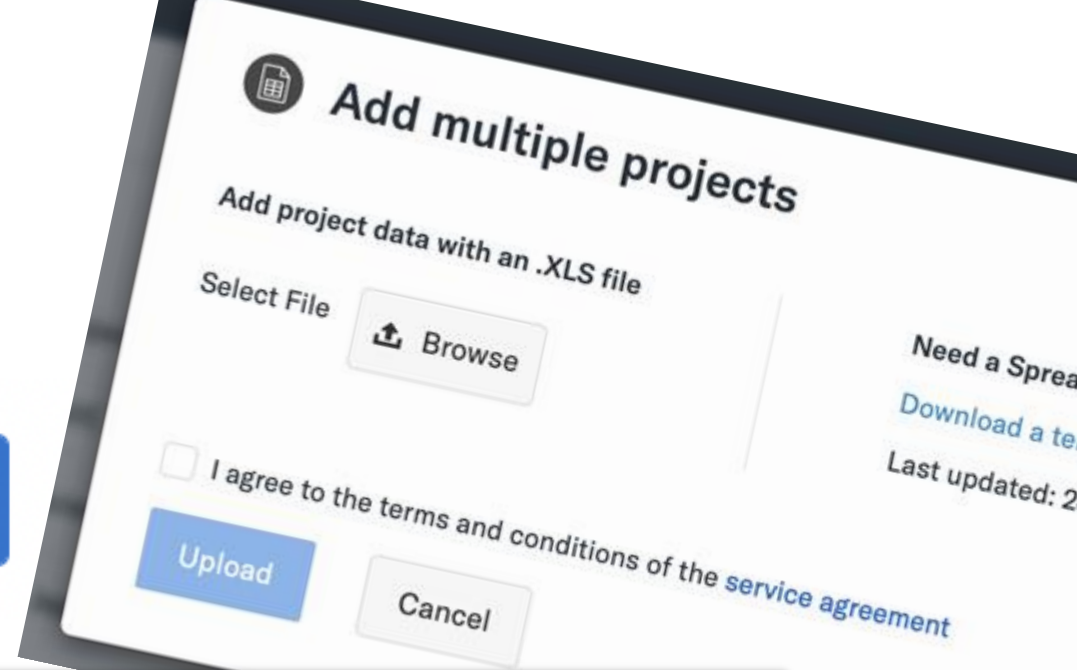
The background interface also shows a sidebar with navigation options: Overview, Performance, Data, Models, Project Tools, Advanced Scoring, Performance, Certificates, Climate Risk, Play to Zero, and Financial Models. The top right corner features 'Arc Essentials' and 'Play to Zero' icons.

# Get Started

+ Add a Project

## Process

1. Load anything
2. Score everything
3. Certify the best

A screenshot of the "Import from GRESB" form. The header features the "arc" logo. The form contains the following fields: "Portfolio Name" (text input), "Gross Area Unit" (dropdown menu with "square feet" selected), and "Owner Type" (dropdown menu with "Business Improvement District" selected). A link "Need a GRESB spreadsheet? Download GRESB Template" is on the right. The footer text reads "Owner Organization (Click here to add new organization if not existing.)".

**LEED** **V5**



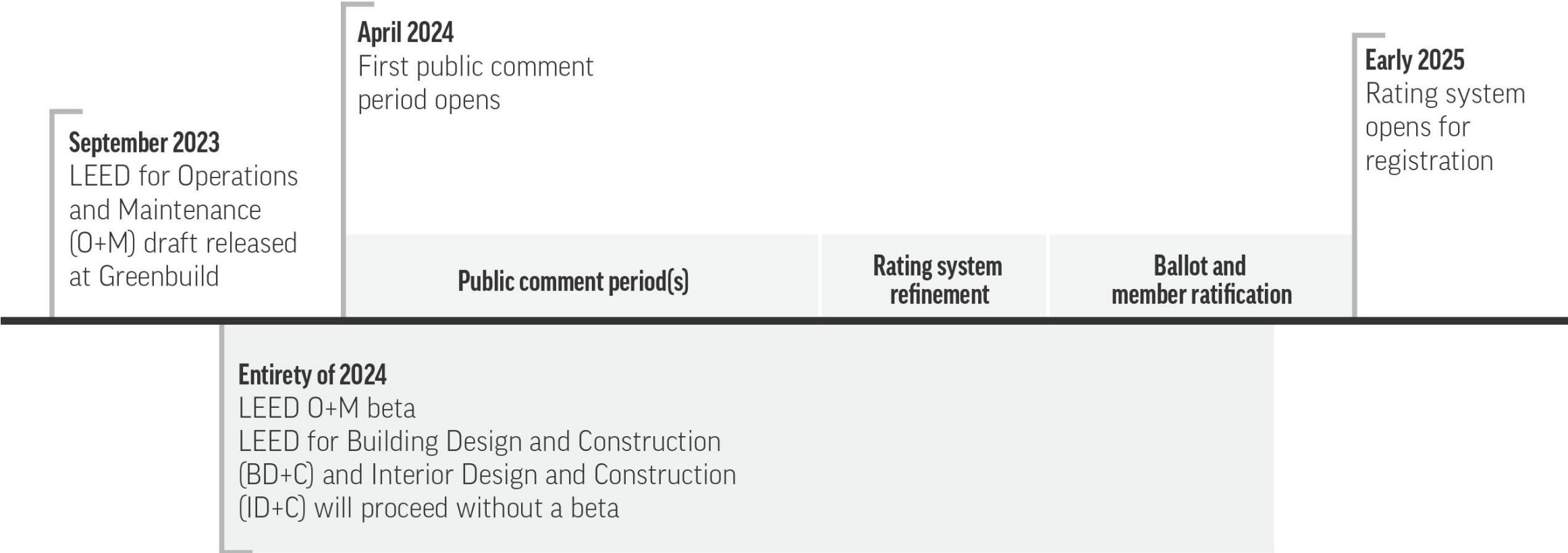
# **LEED** **V5**

**A market ready rating system that will drive the built environment toward a near zero carbon future that is equitable, resilient, and promotes the wise, safe utilization of all resources.**

# LEED V5

**The next version of the globally recognized comprehensive framework for green building practices. Embracing market demands for greater accountability, v5 will champion solutions to align the built environment with critical imperatives including decarbonization, ecosystem conservation and restoration, equity, health, and resilience.**

# LEED v5 Development Timeline







# Impact Areas

- **DECARBONIZATION** drives the industry towards a decarbonized built environment across all major sources of emissions: operational, embodied and transportation.
- **QUALITY OF LIFE** uses human-centric strategies to address crucial aspects of sustainable building, including human health and well-being, resilience, equity and inclusion, and community wellbeing.
- **ECOLOGICAL CONSERVATION AND RESTORATION** emphasizes strategies and actions that can be implemented at the individual asset level that limit environmental degradation and seek to rehabilitate and restore ecosystems.

# Project Priorities & Innovation Credit Category

The Innovation in Design credit category evolves to become “Project Priorities and Innovation”

## **FLEXIBILITY**

This update creates greater flexibility for projects to address their unique contexts and priorities including typology, culture, location, areas of innovation and individual performance objectives.

## **RESPONSIVENESS**

This approach will support LEED project teams in responding to rapidly emerging industry knowledge, technologies and innovative solutions.

## **CREDIT POINT THRESHOLD RAISED**

This category will afford project teams greater creativity and versatility in balancing their respective priorities.

# Continuity across the building lifecycle



**Initial development**

**Existing buildings for  
ongoing assessment of  
performance and guidance  
towards improvement  
where needed**

**Annual impact reporting**

**Ongoing certification**

# Operations + Maintenance

Position every building on a path to improved performance while maintaining the pursuit of market transformation and leadership.

How we get there:

- Provide education and leadership in a critical time.
- Establish a roadmap of actionable and transformational criteria, and a plan for improvement over time.
- Achieve certification through measurable building performance.
- Reward existing buildings that start down the path toward decarbonization by creating strategic long-term plans and taking immediate steps.





# LEEDv5 Operations+Maintenance: Existing Buildings

## Integrative Process, Planning & Assessments 4

|        |  |          |
|--------|--|----------|
| Prereq | Operations Assessment: Climate Action, Quality of Life and Ecological Conservation and Restoration | Required |
| Credit | Operational Planning and Response for Resilience   | 2        |
| Credit | Equity within Operations and Maintenance Staff   | 2        |

## Location and Transportation 10

|        |  |    |
|--------|--|----|
| Credit | Sustainable Transportation Performance | 10 |
|--------|--|----|

## Sustainable Sites 4

|        |  |   |
|--------|--|---|
| Credit | Rainwater Management                         | 2 |
| Credit | Heat Island Reduction                        | 1 |
| Credit | Light Pollution and Bird Collision Reduction | 1 |

## Water Efficiency 14

|        |                            |          |
|--------|----------------------------|----------|
| Prereq | Water Metering & Reporting | Required |
| Credit | Water Performance          | 14       |

## Energy and Atmosphere 37

|        |   |          |
|--------|---|----------|
| Prereq | Energy, Carbon & Operations Foundations | Required |
| Credit | Decarbonization and Efficiency Plans    | 5        |
| Credit | GHG Emissions Reduction                 | 12       |
| Credit | Refrigerant Impact Reduction            | 2        |
| Credit | Grid Interactive                        | 4        |
| Credit | Energy Performance and Commissioning    | 14       |

## Materials and Resources 11

|        |  |   |
|--------|--|---|
| Credit | Waste Performance  | 9 |
| Credit | Embodied Carbon of Interior Materials During Renovations | 2 |

## Indoor Environmental Quality 20

|        |  |          |
|--------|--|----------|
| Prereq | Verification of Ventilation and Filtration | Required |
| Prereq | No Smoking                                 | Required |
| Credit | Indoor Air Quality Performance             | 12       |
| Credit | Occupant Satisfaction Survey               | 3        |
| Credit | Green Cleaning                             | 3        |
| Credit | Integrated Pest Management                 | 2        |

## Project Priorities & Innovation 10

|        |                    |    |
|--------|--------------------|----|
| Credit | Project Priorities | 10 |
|--------|--------------------|----|

|              |                         |            |
|--------------|-------------------------|------------|
| <b>Total</b> | <b>Possible Points:</b> | <b>110</b> |
|--------------|-------------------------|------------|

# LEEDv5 Operations+Maintenance: Existing Buildings

## Decarbonization

|           |  |          |
|-----------|--|----------|
| IP Prereq | Operations Assessment: Climate Action, Quality of Life and Ecological Conservation and Restoration | Required |
| LT Credit | Sustainable Transportation Performance   | 10       |
| SS Credit | Heat Island Reduction  | 1        |
| WE Credit | Water Performance  | 14       |
| EA Prereq | Energy, Carbon & Operations Foundations  | Required |
| EA Credit | Decarbonization and Efficiency Plans   | 5        |
| EA Credit | GHG Emissions Reduction  | 12       |
| EA Credit | Refrigerant Impact Reduction   | 2        |
| EA Credit | Grid Interactive   | 4        |
| EA Credit | Energy Performance and Commissioning   | 14       |
| MR Credit | Waste Performance  | 9        |
| MR Credit | Embodied Carbon of Interior Materials During Renovations   | 2        |

## Quality of Life

|           |  |          |
|-----------|--|----------|
| IP Prereq | Operations Assessment: Climate Action, Quality of Life and Ecological Conservation and Restoration | Required |
| IP Credit | Operational Planning and Response for Resilience   | 2        |
| IP Credit | Equity within Operations and Maintenance Staff   | 2        |
| LT Credit | Sustainable Transportation Performance   | 10       |
| SS Credit | Heat Island Reduction  | 1        |
| EQ Prereq | Verification of Ventilation and Filtration   | Required |
| EQ Prereq | No Smoking   | Required |
| EQ Credit | Indoor Air Quality Performance   | 12       |
| EQ Credit | Occupant Satisfaction Survey   | 3        |
| EQ Credit | Green Cleaning   | 3        |
| EQ Credit | Integrated Pest Management   | 2        |

## Ecological Conservation and Restoration

|           |  |          |
|-----------|--|----------|
| IP Prereq | Operations Assessment: Climate Action, Quality of Life and Ecological Conservation and Restoration | Required |
| LT Credit | Sustainable Transportation Performance   | 10       |
| SS Credit | Rainwater Management   | 2        |
| SS Credit | Heat Island Reduction  | 1        |
| SS Credit | Light Pollution and Bird Collision Reduction   | 1        |
| WE Prereq | Water Metering & Reporting   | Required |
| WE Credit | Water Performance  | 14       |
| MR Credit | Waste Performance  | 9        |
| EQ Credit | Integrated Pest Management   | 2        |



**LEED** **V5**

**QUESTIONS?**

**THANK YOU.**

# Questions?



# Upcoming Meetings and Events

## Regional Integration of Sustainability Efforts (RISE) Coalition

**Next meeting:** July 31, 2024

**Location:** Microsoft Teams

[Add to calendar](#)



Visit the [committee page](#) to stay updated on meetings.

Learn more about the RISE Coalition on their [program page](#).

# Stay Informed on Upcoming Events

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## Upcoming NCTCOG Events

Environment & Development: <https://nctcog.org/envir/events>

DFW Clean Cities: [www.dfwcleancities.org/events](http://www.dfwcleancities.org/events)

## NCTCOG's Free E-mail Lists and Committee Updates

General: <https://www.nctcog.org/stay-informed?ext=>

Environmental & Development: <https://www.nctcog.org/envir/mail>



# NCTCOG Resources

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## Conserve North Texas ([www.conservenorthtexas.org](http://www.conservenorthtexas.org))

- Recently Added Resource: Climate Mapping for Resilience and Adaptation Portal

## Go Solar Texas ([www.gosolartexas.org](http://www.gosolartexas.org))

## Energy Management, Efficiency, and Renewable Energy

([www.nctcog.org/envir/natural-resources/energy-efficiency](http://www.nctcog.org/envir/natural-resources/energy-efficiency))

- Posting Soon! Fall Energy Funding Digest

# NCTCOG Resources

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## PACE (Property Assessed Clean Energy) Adoption in North Texas StoryMap

- Showcases PACE adoptions and PACE-financed projects in the NCTCOG region, and the steps to get started accessing PACE resources.
- <https://storymaps.arcgis.com/stories/94afd48f8f05491bb55991aec608b3d7d7>

# SECO Resources



No-cost resources offered by SECO to aid entities in achieving their energy management or efficiency goals



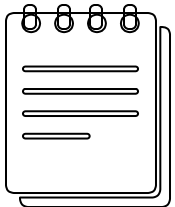
## LoanSTAR

- 2.5% (1.5% for ARRA funds)
- Simple payback of 15 years or less
- **SECO is pausing receipt of applications until August 1, 2024**



## WattWatchers of Texas

- Behavioral program for schools and families
- TEKS aligned STEM material



## Technical Assistance

- Preliminary Energy Assessment (PEAs)
- Analysis of current systems, O&M programs
- Energy Management Policy development
- Funding options
- Prioritized project planning



## Local Government Energy Reporting

- Technical assistance for State-mandated energy efficiency and reporting


# Preliminary Energy Assessments (PEAs)



Preliminary Energy Assessments (PEAs) are provided by the State Energy Conservation Office (SECO) and offer cost effective resource efficiency measures entities can implement to decrease energy consumption at **no cost to you!**

- Help guide the development of an energy management policy
- Provides facility benchmarking using ENERGY STAR Portfolio Manager
- Recommended maintenance procedures
- Develop efficiency level guidelines for equipment purchases

**Preliminary Energy Assessment Service Request Form**  
Form# 50-852



Public Entity Name \_\_\_\_\_ Telephone \_\_\_\_\_  
Contact Person \_\_\_\_\_ Title \_\_\_\_\_  
Email Address \_\_\_\_\_ County \_\_\_\_\_  
Street Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ ZIP Code \_\_\_\_\_  
Mailing Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ ZIP Code \_\_\_\_\_

**Preliminary Energy Assessment Service Eligibility**  
The State Energy Conservation Office (SECO) provides free preliminary energy assessments (PEAs) for existing public facilities and infrastructure. Eligible entities include municipal and county governments, public school districts, county hospitals, port authorities, major airports, public water authorities and municipally owned utilities. Leased or rented facilities and infrastructure are not eligible for this service.

**Principles of Agreement**  
By submitting this request form, the entity listed above must agree to:

- select a contact person to work with SECO and its designated contractor to establish an energy policy and set realistic energy efficiency goals;
- allow SECO's designated contractor to provide walk-through assessments of selected facilities;
- schedule a time for SECO's designated contractor to make a presentation on the assessment findings to key decision-makers;
- consider implementing the PEA's energy savings recommendations; and
- allow SECO to post portions of this report on its website

**Additional Questions**

Has this organization used SECO's technical assistance or PEA services in the past?  Yes  No  
Is the primary contact for this PEA familiar with SECO's LoanSTAR revolving loan program?  Yes  No  
Has this organization used SECO's LoanSTAR revolving loan program in the past?  Yes  No

**Signature**  
This agreement must be signed by your organization's chief executive officer or other signing authority.

Signature \_\_\_\_\_ Date \_\_\_\_\_  
Print Name \_\_\_\_\_ Title \_\_\_\_\_

Submit completed forms to SECO at [Margaret.Garcia@cpa.texas.gov](mailto:Margaret.Garcia@cpa.texas.gov)  
or by mail to: State Energy Conservation Office  
Attn: Margaret Garcia  
111 E. 17th Street  
Austin, TX 78711-1440

50-852 (10-19/2)

# SECO No-Cost Technical Assistance



Through this program SECO contracts with engineering firms to provide customized, on-site, energy-related services ranging from basic consultation to feasibility studies.


Eligible entities may request assistance with either **energy** or **water**-related technical matters.

Upon determination that the requested services are reasonable and within the contractors' scope of work, SECO will assign an engineer to contact the entity officials to determine the level of service necessary to provide assistance.

For more information, visit [SECO's Technical Assistance webpage](#).

### Technical Assistance Service Request Form

Form# 50-855



|                    |      |           |          |
|--------------------|------|-----------|----------|
| Public Entity Name |      | Telephone |          |
| Contact Person     |      | Title     |          |
| Email Address      |      | County    |          |
| Street Address     | City | State     | ZIP Code |
| Mailing Address    | City | State     | ZIP Code |

**Description of Technical Assistance Needs**

**Technical Assistance Eligibility**

The State Energy Conservation Office (SECO) provides free technical assistance for existing public facilities and infrastructure. Eligible entities include municipal and county governments, public school districts, county hospitals, port authorities, major airports, public water authorities and municipally owned utilities. Leased or rented facilities and infrastructure are not eligible for this service.

**Principles of Agreement**

By submitting this request form, the entity listed above must agree to:

- select a contact person to work with SECO and its designated contractor to establish an energy policy and set realistic energy efficiency goals;
- allow SECO's designated contractor to provide walk-through assessments of selected facilities;
- schedule a time for SECO's designated contractor to make a presentation on the assessment findings to key decision-makers; and
- allow SECO to post portions of this report on its website

**Additional Questions**

|   |                              |                             |
|---|------------------------------|-----------------------------|
| Has this organization used SECO's technical assistance or PEA services in the past? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Is the primary contact familiar with SECO's LoanSTAR revolving loan program?        | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Has this organization used SECO's LoanSTAR revolving loan program in the past?      | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

**Signature**

This agreement must be signed by your organization's chief executive officer or other signing authority.

|            |       |
|------------|-------|
| Signature  | Date  |
| Print Name | Title |

Submit completed forms to SECO at [Margaret.Garcia@cpa.texas.gov](mailto:Margaret.Garcia@cpa.texas.gov)  
or by mail to: State Energy Conservation Office  
Attn: Margaret Garcia  
111 E. 17th Street  
Austin, TX 78711-1440

50-855 (10-19/2)

# Texas LoanSTAR Revolving Loan



## Finances Projects that Reduce Energy/Water/Utility Costs

- Simple Payback Period of **15 Years or Less**
- 2.5% Loan Interest Rate; 1.5% if you choose ARRA Funds with more reporting requirements

**SECO is pausing receipt of LoanSTAR loan applications until August 1, 2024.**

## Open Enrollment Through **August 30, 2024**

- Maximum \$6 Million Loan Per Application
- Maximum 1 Loan per Applicant

For more information visit the [Notice of Loan Fund Availability](#)



[https://www.youtube.com/watch?v=4lFuj\\_5ZeGI](https://www.youtube.com/watch?v=4lFuj_5ZeGI)

# Closing Reminders

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- **Please complete the webinar evaluation:**  
<https://www.surveymonkey.com/r/D3YQM6Q>
- **Please complete the in-kind match form:**  
<https://www.surveymonkey.com/r/D3QDZJH>

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# Quick Links

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<https://www.conservenorthtexas.org/>

<https://www.nctcog.org/envir/natural-resources/energy-efficiency>

