Transforming the built environment into a smart, sustainable ecosystem

UL Solutions

Safety. Science. Transformation.™

The built environment
has been identified as the
leading consumer of energy
and contributor to carbon
emissions.

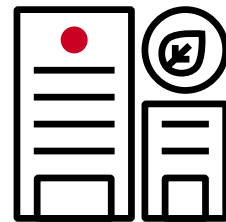What is your strategy to
build a greener future?

Supporting manufacturers of more sustainable building materials and construction

Fostering healthy and sustainable built environments

Assessing and addressing building performance

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Transforming sustainability and performance challenges into opportunities for the buildings and construction industry
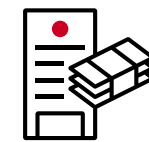
Buildings are currently responsible for approximately 40% of annual CO_2 emissions and account for nearly one-third of the world's energy consumption. To build a greener future, the industry must prioritize sustainability efforts that transform buildings into environments that:

Reduce environmental impact by decreasing resource consumption and waste.

Promote occupant health and productivity and waste.

Cut construction, operational and maintenance costs.

This transformation requires significant investment of resources throughout the building's life cycle, from initial design and construction through occupancy, operation, renovation and ongoing maintenance.

Buildings are currently responsible for approximately

40%
of annual CO_2 emissions

Buildings also account for nearly

1/3
of the world's energy consumption

Every step presents the opportunity to:

- Manufacture or select products and systems that help manage ever-rising costs and reduce carbon footprint.
- Establish and maintain compliance with relevant requirements.
- Identify and mitigate risks and vulnerabilities.
- Enhance occupant health and productivity.

Every step poses unique challenges, such as:

- Connecting with expert guidance.
- Demonstrating the accuracy of environmentally friendly marketing claims about materials and products.
- Making appropriate selections that advance sustainability and performance goals.
- Providing independent reassurance about a building's living conditions or performance.

At every step, UL Solutions can help.

We offer a full portfolio of support for the buildings and construction industry as you design, develop, build, own and operate modern structures that promote healthier, more connected living.

Understanding a product's environmental impact and identifying more sustainable products, components and building materials

How UL Solutions can help
- Environmental Product Declaration (EPD) certification
- UL GREENGUARD Certification
- ECOLOGO® Certification
- Product category rules (PCRs)
- UL SPOT Product Database
- Product carbon footprint verification

Maximizing building value

How UL Solutions can help
- Indoor environmental quality (IEQ) services
- SPIRE™ Smart Building Assessment and Rating Programs

Getting meaningful data and actionable insights about building performance

How UL Solutions can help
- SPIRE™ Smart Building Assessment and Rating Programs
- Energy services
  - ASHRAE Levels 1, 2 and 3 and Net-Zero energy audits
  - Commissioning, retro-commissioning and re-commissioning, and monitor-based commissioning services
  - Ventilation assessments
  - Energy and water consumption benchmarking
  - Energy modeling services
- Indoor environmental quality (IEQ) services

Identifying opportunities and implementing measures to:
- Reduce resource consumption and utility costs
- Improve operating performance and indoor environmental quality

How UL Solutions can help
- Energy services
  - ASHRAE Levels 1, 2 and 3 and Net-Zero energy audits
  - Commissioning, retro-commissioning and re-commissioning, and monitor-based commissioning services
  - Ventilation assessments
  - Energy and water consumption benchmarking
  - Energy modeling services

Demonstrating building performance and showcasing commitment to creating healthy environments with independent building sustainability certifications and verifications

How UL Solutions can help
- Green building services and certifications (including LEED, BREEAM, WELL and Fitwell)
- UL Verified Healthy Building Mark
- UL Verified Healthy Building Mark for New Construction
- SPIRE™ Smart Building Assessment and Rating Programs

Uncovering issues that impact indoor environmental quality and protecting properties from potential liabilities related to them

How UL Solutions can help
- SPIRE™ Smart Building Assessment and Rating Programs
- Green building services and certifications
- UL Verified Healthy Building Mark
- UL Verified Healthy Building Mark for New Construction
- UL Verified Healthy Building Mark and UL Verified Healthy Building Mark for New Construction

Meeting compliance requirements and increasing purchasers' confidence in the safety, security, performance and reliability of technologies, products and systems that comprise the smart building ecosystem

How UL Solutions can help
- Smart Systems Rating Program
- Smart building control systems, sensors and cloud-connected controls
  - Testing and certification for electrical safety, functional safety, performance and reliability
  - Over-the-air software updates
  - Design partnership service
  - UL Marketing Claim Verification
  - AI targeted edge computing characteristics marketing claim verification
- Testing and certification services for:
  - Testing and certification services for HVAC, appliances, water and lighting

Meeting compliance requirements and increasing code authorities' and owners' confidence in building envelope safety and performance

How UL Solutions can help
- Building envelope services
- Building envelope field and on-site testing

Supporting more sustainable building materials and construction

The opportunity

Showcase your commitment to make and use more sustainable products through third-party services

UL Solutions offers testing, certification and verification to manufacturers seeking to provide trustworthy and transparent product information and to empower buyers genuinely seeking more environmentally friendly building materials to find them.

Additionally, we bring stakeholders together to develop product category rules, support life cycle assessments and verify environmental product declarations for green building materials. These independent services are meaningful to the community of building products and systems manufacturers, regulators, buyers/ suppliers, specifiers, architects, green building program owners and more.

The challenge

Identifying more sustainable building products

Greenwashing abounds, with some manufacturers of building materials capitalizing on vague terms and making unsupported (and often unsupportable) label claims regarding factors such as chemical content, product stewardship, off-gassing, carbon footprint/greenhouse gas (GHG) emissions and more.

What we offer

Environmental Product Declaration (EPD) certification

Our verified EPDs are recognized and respected by buyers, building specifiers and purchasing organizations, allowing them to quickly review a product's environmental impacts and utilize them in projects. UL Solutions is a leading ISO 14025 program operator for independent, third-party verification of EPDs.

Product carbon footprint verification

Leverage our trusted brand and tools that support materially correct calculations to help reduce the risk of carbon calculation data error, demonstrate transparency regarding the climate impact of your products, and build the confidence of interested parties that your product greenhouse gas statement meets international standards. Select from multiple product carbon footprint verification options to suit different goals or requirements.

UL GREENGUARD Certification

Over 450 government purchasers and retailers around the world recognize, refer to and look for UL GREENGUARD Certified products, which are scientifically proven to meet rigorous third-party chemical emissions standards and screened for more than 15,000 volatile organic compounds (VOCs). There are more than 90,000 UL GREENGUARD Certified products that span 32 product families, including building materials.

ECOLOGO® Certification

These voluntary, multi-attribute, life cycle-based environmental certifications indicate a building product has undergone scientific testing and exhaustive auditing to demonstrate compliance with third-party environmental standards for a range of criteria, including materials, energy, manufacturing and operations, health and environment, product performance and use, and product stewardship and innovation.

UL SPOT Product Database

Our comprehensive, credible and collaborative product search database helps architects, manufacturers, retailers and purchasers find information about more than 130,000 products' sustainability attributes, certifications and more.
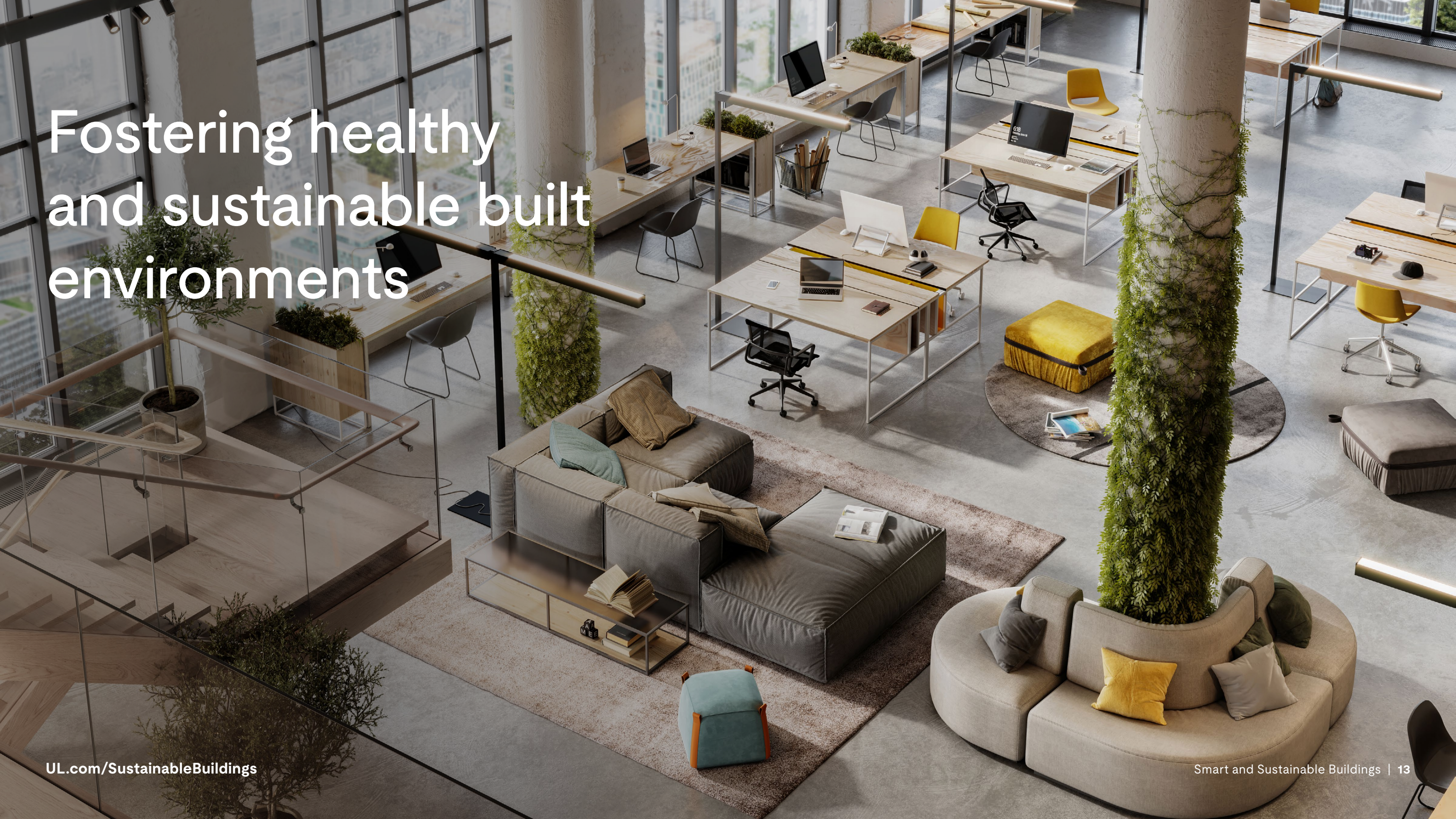
Product category rules (PCRs)

UL Solutions can certify EPDs using existing PCRs created by any program operator. When no PCR exists for a product group or particular geography, we can work with stakeholders to establish one or address regionally specific requirements for existing PCRs created for another market.

Fostering healthy and sustainable built environments

The challenge

Making and demonstrating progress toward sustainability goals

Buildings and construction industry professionals need trustworthy information to create actionable plans that advance the healthy and sustainable qualities of their buildings. While occupants will certainly benefit from improved environmental conditions, enhancing these attributes can also help conserve energy and water, reduce greenhouse gas emissions and provide a marketable distinction from other buildings.

It's not enough to claim that a building offers the kind of environment an occupant seeks. Today's discerning occupants want data-driven proof that a building's interior, exterior and systems meet health, wellness and performance expectations.

The opportunity

Take a science-driven approach to assessing building's sustainability and health attributes

UL Solutions has developed its own rigorous assessment programs such as UL Verified Healthy Building that analyze factors such as indoor air quality, water quality, hygiene, light and acoustics that can result in a highly recognizable UL Verification Mark. We also provide a wide array of expert-led testing services that explore the sustainability, health and wellness aspects of indoor spaces.

For building owners or managers in pursuit of third-party green building certifications such as LEED, BREEAM, WELL or Fitwel, UL Solutions offers end-to-end guidance and close customer collaboration to create a holistic, cost-effective path that furthers greater sustainability success.

What we offer

Green building services and certifications

The pursuit of third-party sustainability certifications can help increase the value of a building, conserve resources, reduce operational costs and create a meaningful distinction in the marketplace. UL Solutions offers comprehensive support to building owners and management companies in their pursuit of building sustainability certifications — including LEED, BREEAM, WELL and Fitwel — closely collaborating with building owners' and managers' internal teams from project inception through certification submission. We take an integrated approach that focuses on cost-effectiveness, reliability as well as the triple bottom line: people, planet and profit.

UL Verified Healthy Building Mark

Showcase your dedication to creating a healthy environment that helps boost employee, tenant and occupant performance while increasing your building's value, reducing risk and providing returns for investors. In a recent survey, MIT's Real Estate Innovation Lab found that certified and registered "healthy buildings" command rents of 4%-7.7% more per square foot than buildings without this distinction.

The UL Verified Healthy Building program offers the real estate industry an independent source of reassurance from a respected safety science leader with 40 years of experience in indoor environment inspections. Our quantitative review process is driven by building metrics discerned through performance testing, comprehensive on-site visual inspections and verification of policy implementation. The UL Verified Healthy Building program is a manual testing program taking measurements of air, water, noise and other factors across a building, whereas our SPIRE™ program (discussed in the Assessing and Addressing Building Performance section of this brochure) looks to understand what technology has been put into place to automatically monitor and control these metrics.

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recognized the UL Verified Healthy Building Mark as one of 17 rating systems with the most relevance to ASHRAE's review criteria.

Certified and registered "healthy buildings" command rents of

4%-7.7% more

per square foot than buildings without this distinction.

Indoor environmental quality (IEQ) services

Take a comprehensive, science-driven approach to evaluating and improving the sustainability, health and wellness aspects of indoor spaces. UL Solutions IEQ testing services help building owners and managers:

- Provide confidence to tenants and occupants regarding the health of their indoor environment via our science-driven proactive IEQ monitoring program.
- Identify and resolve indoor environmental disruptions through reactive inspection services that provide corrective action recommendations and review corrective actions already taken.
- Save your organization time and money with a Healthy Building due diligence assessment that helps uncover any mold or moisture issues in a property under consideration.

- Protect properties from potential liabilities related to mold, moisture and IEQ problems through our mold and moisture quality survey program.
- Develop Legionella risk and water management plans to obtain compliance with ASHRAE Standard 188, and the Centers for Medicare and Medicaid Services (CMS) accreditation.
- Demonstrate building performance for WELL, Fitwel and LEED certifications with on-site testing.

Assessing and addressing building performance

The challenge

Optimizing the operations, performance and return on investment of the smart building ecosystem

Today, maximizing the value of an asset means transforming it into an environment that elevates occupant comfort and productivity, streamlines energy use, and facilitates building management's ability to anticipate and respond to changing conditions.

Smart and sustainable buildings use technology to create an ecosystem that responds to the needs of tenants and occupants — and helps you meet conservation and cost-saving goals.

Although the buildings and construction industry is currently responsible for approximately 40% of annual greenhouse gas emissions, smart technologies can help you make progress toward aggressive decarbonization goals set. Smart sensors coordinated through a building control system can reduce operational costs and energy and water use, improve building performance and anticipate maintenance needs, and boost occupant comfort and productivity.

The opportunity

Connecting with meaningful building performance insights

UL Solutions can connect you with meaningful insights about current building performance through smart building assessment and transparent rating systems that analyze a wide range of factors. With access to this rich data, you'll get the direction you need to make sustainability progress and also improve occupant satisfaction and productivity.

Our independent assessment frameworks can help you anticipate risks and improve building operations and performance. We'll help fulfill requirements from regulators, occupants and third-party certification programs that can lead to rebates, tax incentives and increased profitability.

What we offer

Energy services for healthy buildings

Take a closer look at core aspects of existing buildings, new construction and major renovations. Our energy services for healthy buildings can help you identify areas for optimization in accordance with an array of sustainability goals:

- **ASHRAE Level 1, Level 2 and Level 3 and Net-Zero energy audits** identify conservation opportunities and create a road map for implementation.
- **Retro and re-commissioning (RCx) services** start by assessing building systems and performance to determine the potential to reduce resource consumption.
- Our **certified commissioning agents (CxA)** can optimize controls and calibrate critical sensors and functional testing equipment to help reduce utility costs, improve operating performance and boost IEQ.

- We perform **ventilation assessments** that determine if a building meets ASHRAE Standard 62.1 minimum standards.
- As more municipalities require reporting about water consumption, **energy and water consumption benchmarking** from UL Solutions compares a building's usage against similar buildings so owners and operators can better understand building performance and identify opportunities for conservation.
- UL Solutions offers **commissioning (Cx) services** to support your efforts to design, build and operate new buildings or major remodels in alignment with increasingly stringent performance targets and the owner's project requirements.

- Through **monitor-based commissioning (MBCx)**, UL Solutions engages in continuous, real-time monitoring during design and construction to assess the performance of newly installed energy and water consuming systems within the project or building.
- **Energy modeling services** from UL Solutions empower strategic decision making to help maximize system efficiency, meet green building certification requirements, comply with codes, benefit from utility and financial incentives, and advance tactical building construction decisions.

SPIRE™ Smart Building Assessment and Rating Programs

This holistic framework provides building owners, managers and operators with actionable data and insights that can help lower costs, mitigate risks, address tenant concerns and enhance overall asset value. The SPIRE™ program looks at overall building performance across six major criteria: power and energy, health and well-being, life and property safety, connectivity, cybersecurity, and sustainability.

Smart Systems Rating Program

Smart technology original equipment manufacturers (OEMs) play a significant role in unifying smart building stakeholders through their offerings. The market needs independent reassurance that technologies work as intended and are purposely built with an operational mindset for the whole building. UL Solutions helps OEMs:

- Expand product relevance by addressing the evolving needs of our customers.
- Identify how to improve the product development life cycle through holistic assessment.
- Differentiate their products in the market with UL Marketing Claim Verification.
- Align with organizational goals.
- Verify features and smart capabilities.
- Enhance smart product transparency for building owners and purchasers.

Our Smart Systems Rating Program is a marketing claim verification program in which smart building systems and products are comprehensively assessed based on six dimensions: communications and interoperability, resiliency, cybersecurity, control and automation, digital experience, and functional value. Smart systems that are assessed through the program receive a level rating of Smart System/Product Verified — Silver, Gold, Platinum or Diamond based on the assessment results. Upon successful assessment, UL Solutions will issue a UL Verification Mark that can be publicly accessed and used for marketing claims.

Testing and certification services for controls

Independent testing and certification services from UL Solutions demonstrate that building automation controls meet interoperability standards and support the safe operation of appliances with embedded control hardware and software. UL Solutions provides unmatched technical expertise and global support across our portfolio of controls offerings for components, end products, systems and ecosystems.

- Electrical safety: UL/CSA/IEC 60730, the Standard for Automatic Electrical Controls, IEC 60335 and other standards
- UL 916, the Standard for Energy Management Equipment
- Sensors and other ecosystems
- Cloud-connected controls certification
- Edge computing characteristics marketing claim verification for AI targeted edge devices
- Design partnership service
- Performance and reliability
- Functional safety assessment, testing, and certification
- Marketing Claim Verification
- Over-the-air (OTA) software updates (RP 1499, UL/IEC/CSA 60730, IEC 60335)

We also offer safety, security and interoperability testing and certification services for the products that support safer, more secure, smart building ecosystems — including smart building control systems, HVAC, appliances, water and lighting.

Why choose UL Solutions for your smart, sustainable building strategy?

Meaningful relationships in the built environment community
We have developed meaningful relationships with trade associations to better understand the needs of industry stakeholders, respond to their needs and escalate their concerns. These organizations include American Institute of Architects (AIA), Building Owners and Managers Association (BOMA) International and International Facility Management Association (IFMA). Additionally, we have cultivated long-standing partnerships with safety, security and sustainability organizations. Together, we make up a community dedicated to a more stable, productive and profitable built environment ecosystem.
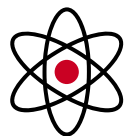
Global reach, local convenience
UL Solutions has 90+ sites with laboratories in key locations around the world providing vital testing and certification services, with additional locations offering inspection, verification, advisory and auditing services. These innovative centers specialize in technologies relevant to buildings, construction and real estate, including sustainability, fire safety, performance, cybersecurity, electromagnetic compatibility (EMC) testing and much more. In addition to laboratory settings, UL Solutions also brings science directly to customers through field-testing programs that analyze complex built environment systems against real-world conditions.

Trusted by the world's most prominent players in the buildings and construction industry
Through key programs, such as the UL Verified Healthy Building and SPIRE™ Smart Building Assessment and Rating programs, UL Solutions works directly with high-profile buildings and managers, including The Music Center (Los Angeles, Calif.), Microsoft and Corning corporate headquarters, Brookfield Properties (Southern California), Vancouver International Airport (British Columbia, Canada), Incheon International Airport (Seoul, Korea) and more.

Science-first focus
We are a global leader in applied safety science. Our work puts the scientific method at the center, and we rigorously adhere to principles of objectivity and observation that lead to discovery and innovation. Through our investments in new laboratories and strong relationships with energy transition and decarbonization leaders, UL Solutions is part of a worldwide network of future-forward scientific excellence.

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UL.com/SustainableBuildings

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