

1. What are the top 2–3 elements of ASHRAE 189.1 and why is it important?

The American Society for Heating, Refrigeration, and Air-conditioning Engineers (ASHRAE) has long been the reference organization for developing North American building design standards relative to energy efficiency and performance. Their reference standard, ANSI/ASHRAE/IES Standard 90.1-2022, maintained via addenda, has served as the global benchmark for baseline design of energy-efficient buildings and has been used to develop codified energy standards and design practices around the world.

To address the growing sustainable design movement and provide a globally recognized guide with a scientifically rigorous and integrated process, ASHRAE publishes and maintains Standard 189.1 — developed jointly with ICC, USGBC, and IES— as the green code foundation for the International Green Construction Code (IgCC). Standard 189.1 continues to be updated through addenda, with the 2023 edition and 2024–2025 addenda now active.

Standard 189.1 builds on 90.1's energy baseline and adds integrated site, energy, IEQ, materials, water, commissioning, and operations provisions suitable for adoption by jurisdictions seeking high-performance, low-carbon outcomes.

It is applied in conjunction with the current editions of ANSI/ASHRAE/IES Standard 90.1 (2022), ANSI/ASHRAE Standard 62.1 (Ventilation for Acceptable IAQ), and ANSI/ASHRAE Standard 55 (Thermal Environmental Conditions), as updated by addenda.

As with ASHRAE/IES Standard 90.1-2022, ANSI/ASHRAE/ICC/USGBC/IES Standard 189.1 is envisioned to be adopted by code- and construction-governing authorities worldwide as a sustainable design standard. Architectural products that wish to participate in the sustainable design industry should pay careful attention to the requirements outlined in this standard and proactively develop and test new products to achieve or surpass the performance ratings and documentation it references. ASHRAE/IES 189.1 is under continuous maintenance, ensuring that regulations and codes continue to reflect current industry design and construction standards.

ASHRAE/IES 189.1 establishes performance rating benchmarks that are either in addition to or more stringent than those in ASHRAE/IES 90.1. These include requirements for ratings, product re-evaluations, and tested factors related to daylight diffusion, U-factor, SHGC, sound ratings, recycled content, equivalent CO₂ emission reductions, life cycle assessment, and VOC emissions. ASHRAE/IES 189.1 applies to new construction, major retrofits and remodels, and the installation of new equipment and improvements to existing buildings.

While ASHRAE/IES 189.1 references Tubular Daylighting Devices (TDDs) as a unique daylighting technology, most related performance attributes remain within the skylight product classification. Specific factors and/or exclusions are established for TDD products within the ASHRAE/IES 189.1 document.

Note: 90.1-2022 introduces Energy Credits that projects must earn from measures such as energy efficiency, load management, or renewables. This affects daylighting trade-offs and controls, including daylight dimming and continuous control zones.



2. How can the Solatube Daylighting System help me meet ASHRAE 189.1 standards?

By using a building's carbon footprint as a primary benchmarking tool for evaluating design options, ASHRAE 189.1 establishes a rigorous and beneficial approach to justifying energy-conserving technologies. The key goal in building design and technology evaluation is to identify strategies that reduce annual energy consumption and, consequently, the building's CO₂ footprint. As an advanced optical daylighting system, Solatube products—when used with effective daylight-harvesting lighting control systems—can play a critical role in reducing a building's annual energy consumption and carbon footprint. The highly predictable and consistent daylight distribution provided by Solatube Daylighting Systems simplifies daylighting design, commissioning, and post-construction monitoring.

2025 Enhancements:

- Coordinate daylighting with 90.1-2022 Energy Credits (e.g., continuous daylight dimming and expanded control zones) to help meet required credit counts.
- Reference 189.1-2023 and its addenda for IEQ daylight quality, glare mitigation, and commissioning requirements affecting lighting controls.
- Consider occupant health and comfort goals: ASHRAE Standard 241 (Control of Infectious Aerosols), published in 2023, is increasingly referenced alongside 62.1 and 55 within the broader context of indoor environmental quality.

3. How do other daylighting systems compare in meeting ASHRAE standards?

When properly designed and applied, all daylighting technologies can reduce annual energy consumption. The unique optical capabilities and predictable performance of Solatube Daylighting Systems make them highly desirable to designers. Their small aperture size, modular assembly, and ability to separate rooftop apertures from interior daylight fixtures make Solatube systems both PV-compatible and roof-planning-friendly.

Important 2025 update: ASHRAE 90.1-2022 adds Energy Credits, including a renewable energy path. Many jurisdictions and owners are now targeting on-site PV integration under 189.1 and IgCC programs. Solatube's small, distributed apertures minimize roof congestion and allow for efficient PV layouts while still delivering high-quality daylight to interior spaces. This positioning reflects today's balance between daylighting and renewable energy generation technologies, rather than competing for roof real estate.

Emerging 2025 context: Projects are increasingly addressing life-cycle greenhouse gas accounting. ASHRAE and ICC are developing Proposed Standard 240P to standardize whole-life carbon quantification (embodied + operational). Solatube's Environmental Product Declarations (EPDs) and Life Cycle Assessments (LCAs) can align with this direction, supporting designers and owners in meeting forthcoming documentation requirements.

Resources:

Specification tools, current product approvals, EPD/HPD documentation, and lighting control integration guides.

