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Claire B. Ramspeck, Manager of Standards
SPECIAL NOTE

This American National Standard (ANS) is a national voluntary consensus standard developed under the auspices of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). Consensus is defined by the American National Standards Institute (ANSI), of which ASHRAE is a member and which has approved this standard as an ANS, as "substantial agreement reached by directly and materially affected interest categories. This signifies the concurrence of more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution." Compliance with this standard is voluntary until and unless a legal jurisdiction makes compliance mandatory through legislation.

ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

ASHRAE Standards are prepared by a Project Committee appointed specifically for the purpose of writing the Standard. The Project Committee Chair and Vice-Chair must be members of ASHRAE; while other committee members may or may not be ASHRAE members, all must be technically qualified in the subject area of the Standard. Every effort is made to balance the concerned interests on all Project Committees.

The Manager of Standards of ASHRAE should be contacted for:
1. interpretation of the contents of this Standard,
2. participation in the next review of the Standard,
3. offering constructive criticism for improving the Standard,
4. permission to reprint portions of the Standard.

DISCLAIMER

ASHRAE uses its best efforts to promulgate Standards and Guidelines for the benefit of the public in light of available information and accepted industry practices. However, ASHRAE does not guarantee, certify, or assure the safety or performance of any products, components, or systems tested, installed, or operated in accordance with ASHRAE's Standards or Guidelines or that any tests conducted under its Standards or Guidelines will be nonhazardous or free from risk.

ASHRAE INDUSTRIAL ADVERTISING POLICY ON STANDARDS

ASHRAE Standards and Guidelines are established to assist industry and the public by offering a uniform method of testing for rating purposes, by suggesting safe practices in designing and installing equipment, by providing proper definitions of this equipment, and by providing other information that may serve to guide the industry. The creation of ASHRAE Standards and Guidelines is determined by the need for them, and conformance to them is completely voluntary.

In referring to this Standard or Guideline and in marking of equipment and in advertising, no claim shall be made, either stated or implied, that the product has been approved by ASHRAE.
FOREWORD

The change in this addendum to a maximum of 5 watts per face of exit signs is achievable by commonly available technologies, including, but not limited to, LED, electroluminescent, and cold cathode. An example economic analysis for LED technology follows:

**Incandescent type:** average fixture cost is $25.00 plus two 25-watt lamps @ $.50 each and 10 minutes ($10.00) to change both lamps every 1,000 hours

Energy cost per year: \[50 \text{ watts} \times 8760 \text{ hours} = 438 \text{ kWh} \times 0.08 = 35.08\]

Lamp replacement per year - 18 lamps @ $.50 + 9 changes @ $10.00 \[= 99.00\]

Total operating cost per year \[= 134.08\]

**Compact fluorescent type:** average fixture cost is $35.00 plus two 7-watt lamps @ $5.00 each and 10 minutes ($10.00) to change both lamps every 10,000 hours

Fixture Wattage = 20 watts (two 7-watt lamps plus ballast losses)

Energy cost per year – 20 watts \[\times 8760 \text{ hours} = 175.2 \text{ kWh} \times 0.08 = 14.02\]

Lamp replacement per year – 2 lamps @ $5.00 + 1 change @ $10.00 \[= 20.00\]

Total operating cost per year \[= 34.02\]

**LED type:** average fixture cost is $45.00; no cost for lamps, 3 to 5 watts total and rated over 100,000 hours, that are part of fixture

Energy cost per year – 5 watts \[\times 8760 \text{ hours} = 43.8 \text{ kWh} \times 0.08 = 3.51\]

Lamp replacement per year \[= 0.00\]

Total operating cost per year \[= 3.51\]

Payback compared to incandescent type (394.2 kWh per year saved): \[
\text{Initial installation - } \$45.00/($134.08 - $3.51) = 0.35 \text{ years}
\]

Payback compared to compact fluorescent type (131.4 kWh per year saved): \[
\text{Initial installation - } \$45.00/($34.02 - $3.51) = 1.5 \text{ years}
\]

Note: In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and strikethrough (for deletions).

**Addendum ai to 90.1-2001 (I-P and SI editions)**

Revise Section 9.2.3 as follows:

9.2.3 Exit Signs. Internally illuminated exit signs shall not exceed 5 watts per face. Exit sign luminaries operating at greater than 20 watts shall have a minimum source efficacy of 35 lm/W.
ASHRAE is concerned with the impact of its members’ activities on both the indoor and outdoor environment. ASHRAE’s members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted standards and the practical state of the art.

ASHRAE’s short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the standards and guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive technical committee structure, continue to generate up-to-date standards and guidelines where appropriate and adopt, recommend, and promote those new and revised standards developed by other responsible organizations.

Through its Handbook, appropriate chapters will contain up-to-date standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating standards and guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system’s intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE’s primary concern for environmental impact will be at the site where equipment within ASHRAE’s scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.