ANSI/IES/ALA RP-11-20

Illuminating Engineering Society

RECOMMENDED PRACTICE: LIGHTING FOR INTERIOR AND EXTERIOR RESIDENTIAL ENVIRONMENTS

AN AMERICAN NATIONAL STANDARD

Approved American National Standard

ANSI

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Publication of this Recommended Practice has been approved by the IES.
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Prepared by:
The IES Residential Lighting Committee

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Prepared by the IES Testing Procedures Committee.

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Foreword

This Foreword is not part of ANSI/IES/ALA RP-11-20. It is provided for informational purposes only.

Since 1975 in the United States, there has been federal legislation causing regulation of the energy efficiency of lighting components. At first, lamps were regulated, but later legislation and regulations covered a wider array of lamps and included ballasts and luminaires. IES Standards, recommendations, and guidelines typically take the current legislative and regulatory requirements into account. However, due to timing between document development and printing, implementation dates of regulatory actions, and the life of printed materials, the content of IES documents may not always take into account the very latest lighting regulations that have occurred subsequent to the printing or issue date.

The IES always recommends checking with individuals, organizations, and companies knowledgeable in legislative and regulatory issues pertinent to a project prior to applying the principles and guidelines in this document.

This Recommended Practice (RP) does not provide general lighting information that is included in other IES documents. If the reader does not already have this information, it may be obtained as needed from the following IES Standards:

The Lighting Science Series:

- *LS-1-20, Lighting Science: Nomenclature and Definitions for Illuminating Engineering*
- *LS-2-20, Lighting Science: Concepts and Language of Lighting*
- *LS-3-20, Lighting Science: Physics and Optics of Radiant Power*
- *LS-4-20, Lighting Science: Measurement of Light – The Science of Photometry*
- *LS-5-20, Lighting Science: Color*
- *LS-6-20, Lighting Science: Calculation of Light and Its Effects*
- *LS-7-20, Lighting Science: Vision: Eye and Brain*
- *LS-8-20: Lighting Science: Vision: Perceptions and Performance*

The Lighting Practice Series:

- *LP-1-20, Lighting Practice: Designing Quality Lighting for People and Buildings*
- *LP-2-20, Lighting Practice: Designing Quality Lighting for People in Outdoor Environments*
- *LP-3-20, Lighting Practice: Designing and Specifying Daylighting for Buildings*
- *LP-4-20, Lighting Practice: Electric Light Sources – Properties, Selection, and Specification*
- *LP-6-20, Lighting Practice: Lighting Control Systems – Properties, Selection, and Specification*
- *LP-7-20, Lighting Practice: The Lighting Design and Construction Process*
- *LP-8-20, Lighting Practice: The Commissioning Process Applied to Lighting and Control Systems*
- *LP-9-20, Lighting Practice: Upgrading Lighting Systems in Commercial and Industrial Facilities*
- *LP-10-20, Lighting Practice: Sustainable Lighting – An Introduction to the Environmental Impacts of Lighting*
- *LP-11-20, Lighting Practice: Environmental Considerations for Outdoor Lighting*

1.0 Introduction and Scope

1.1 Introduction

When the owner resident is known during the design phase, the residential living space can be made to embody the most detailed aspects of lighting design due to the end user's emotional, intellectual, and personal involvement with the project. An astute designer will be able to address client preferences and convey their personality, while providing a lighting solution suitable to all potential users of the space. This type of project may take longer than anticipated whenever the client should connect with and approve of every detail.

A residence is both a person's own private space and a venue for entertaining relatives and friends. When the owner residents and their preferences are

known ahead of time, proper lighting techniques are employed to address how they will use their home, accommodating everyday likes and dislikes and fulfilling specific wishes to give the owners a better living environment. When the home or living space is designed without knowledge of who its eventual occupants will be, the lighting design can still employ design techniques and strategies to create a space that will be acceptable and appreciated by the majority of its occupants.

Residential design is less formulaic than other kinds of lighting design, and each residential project requires a fresh perspective from the lighting designer. Multipurpose as well as dedicated-use types of rooms are now being built in residential projects that provide, at the most personal level, a unique space of refuge, safety, and family activities. Descriptions of some of these room types that have become more commonplace are found in **Annexes B**, **C**, and **D**.

The use of practical, high-quality lighting is an integral part of good residential lighting design. Certain information in this Recommended Practice document is marked as being of special importance for the lighting of tasks and spaces where users of the space may be elderly or have impaired vision. Also marked for the first time in an IES Recommended Practice document is information intended to make lighting equipment and solutions more resilient, so that lighting can continue to function as needed in the event of storms, earthquakes and other emergencies (see **Section 2.5**).

1.2 Scope

This Recommended Practice is a guide for designing and for teaching lighting. It covers residential living spaces and other areas intended to impart a residential atmosphere. It describes design objectives, criteria for quantity and quality of illuminance, lighting methods, types and uses of equipment, energy use, and electrical code considerations. Various solutions that address residential lighting problems are also presented.

2.0 Factors Affecting the Lighting Plan

Lighting has a profound effect on people in a space, making it one of the most important elements in interior design. Without light, there is no color or shape, no understanding or feeling in the living environment. Lighting creates moods in a space, provides light for tasks, enhances architectural elements, and focuses interest on interior details. Therefore, the first step in determining those aspects of the lighting design most important to the space is gathering information about and understanding the client. This is the initial, "programming" stage.

While input from the client or homeowner is essential, the lighting designer should also seek information from other professionals on the project, including the architect and the interior designer.

2.1 Programming

Information about the needs and wishes of the user or occupant (hereafter referred to as the occupant) should be documented after the initial personal programming interview. Things such as client ages, professions, cultural backgrounds, light sensitivities, physical capabilities, psychological reactions (preconceived notions), and lifestyles should be understood. This helps identify all conceptual lighting design issues and expectations. This meeting information should then be reviewed and approved by the client.

Occupant age is important to understanding light perception and the lessening adaptation to changing light levels, which change with age and may be a safety issue. People from some cultures have unique lighting wishes for their environment. Occupants' eye conditions and physical capabilities will influence the lighting design they can live with comfortably and safely.

Psychological reactions and personal issues are often significant. The client should be asked about certain aspects of lighting that he or she may or may not like. Understanding lifestyle habits is also important. Entertainment needs, work schedules, the needs of other consistent users of the space (children; the