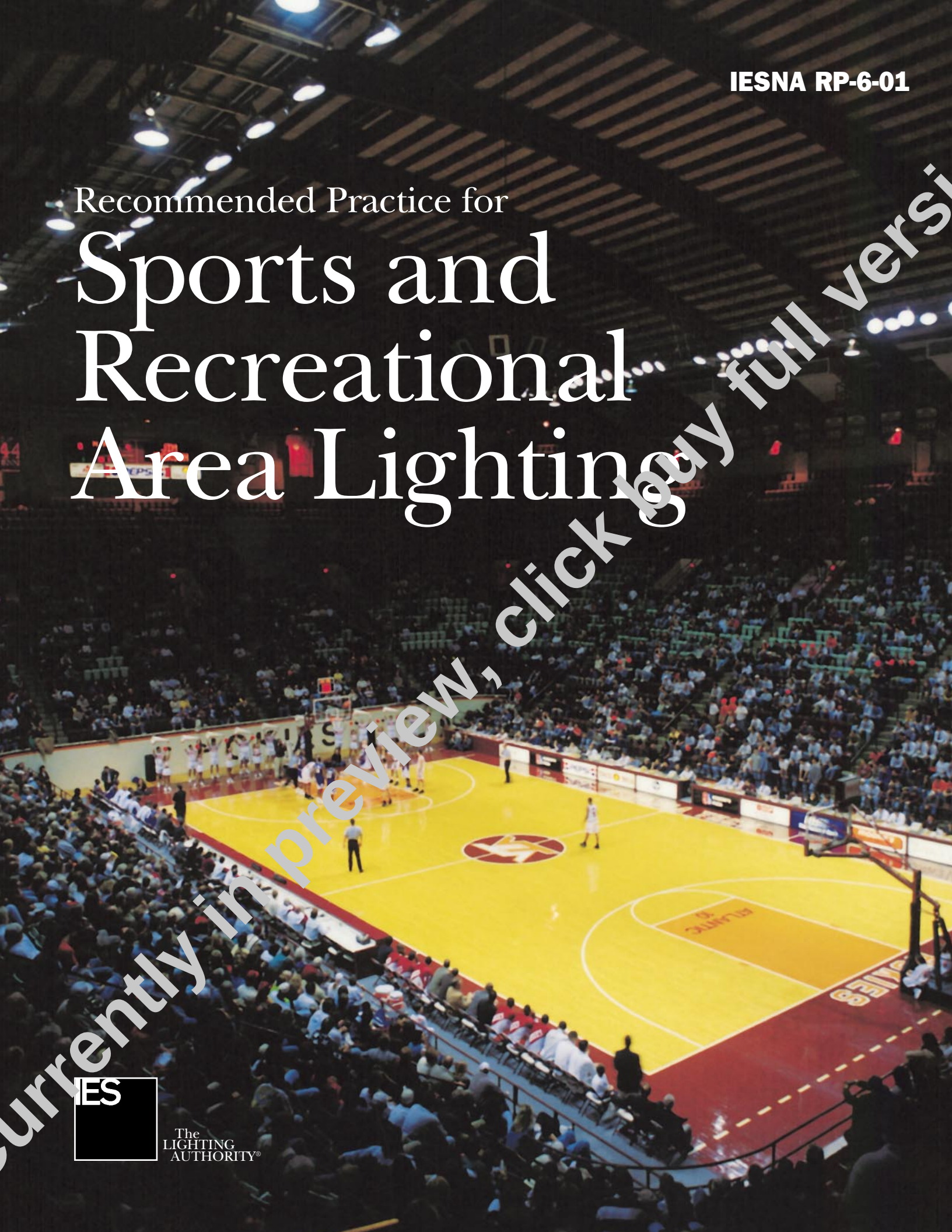
IESNA RP-6-01

Recommended Practice for

Sports and Recreational Area Lighting



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Publication of this Committee Report has been approved by the IESNA. Suggestions for revisions should be directed to the IESNA.

Prepared by:

The IESNA Sports and Recreational Areas Lighting Committee

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IESNA Standards and Guides are developed through committee consensus and produced by the IESNA Office in New York. Careful attention is given to style and accuracy. If any errors are noted in this document, please forward them to Rita Harrold, Director Educational and Technical Development, at the above address for verification and correction. The IESNA welcomes and urges feedback and comments.

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Prepared by the IESNA Sports and Recreational Areas Lighting Committee

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Recommended Practice for Sports and Recreational Area Lighting

1.0 INTRODUCTION

1.1 Purpose and Scope

As the population of North America has grown and prospered, the amount of leisure time devoted to recreation has increased. An important consequence has been growth in the demand for lighted stadiums to accommodate the large numbers of people who want to participate in sporting events. From the 1980s and continuing through the 1990s, light source efficacies have improved. This has allowed for improved lighting quantity and quality without additional electrical energy consumption. Lighted ball fields and other sports facilities are now quite common, and new construction continues. Sports lighting has become a very significant industry that serves a large, growing audience seeking desirable leisure time activities that are healthy and fun.

The use of computers helps experienced lighting designers improve their designs. A computer will *not* help the inexperienced designer produce better designs, nor will it suggest modifications to improper designs. Therefore, lighting designers need a thorough understanding of illuminating engineering principles and the associated calculation software.

The purpose of this Recommended Practice is to provide design criteria for new lighting systems and for the evaluation of existing installations. This Practice includes illuminance recommendations for major sports, such as baseball, tennis, basketball, and football as well as for recreational and social activities such as horseshoe pitching and croquet. Recommendations are also given for lighting general purpose facilities and multi-sport stadiums. This Practice revises and replaces the previous edition last published in 1988.[1]

This Practice consists of several major sections. They include: fundamentals of good illumination, equipment and design factors, power and wiring, illumination recommendations for indoor and outdoor sports, and five Annexes. The Annexes cover illuminance calculations, field measurements, floodlight aiming, maintenance of light levels, and lighting economics. There is also an extensive glossary of lighting terms and a reference list that pertains to sports lighting design.

1.2 Class of Play and Facilities

The traditional way of classifying sports as amateur and professional is no longer meaningful. Modern practices frequently allow amateurs and professionals to compete against each other, such as in golf tournaments and tennis matches. Furthermore, “amateur” basketball and football are now played in the same facilities and at practically the same skill level as professional sports.

In general, as the skill level is elevated, players and spectators require a better and more sophisticated luminous environment. A correlation exists between the size of a facility and the level of play, e.g., a higher skill level attracts a greater number of spectators. As the number of spectators increases their distance from the playing surface increases and their need for increased illuminance to see players and tasks requires the values to increase. Accordingly, facilities should be designed to satisfy the most talented players and accommodate the greatest potential spectator capacity. In large facilities which seat over 10,000 spectators the lighting criteria is usually governed by the needs of television, which will be covered by a future Design Guide. To determine illumination criteria, this Practice groups facilities into four classes based on the skill level of the players and the anticipated number of spectators (see **Table 1**):

- *Class I* - Competition play before a large group (5000 or more spectators). However, for the purpose of this Practice, illumination criteria for individual sports are limited to a spectator capacity of 10,000 or less (see **Figure 1**). Lighting criteria for major stadiums and arenas require special design considerations such as vertical and horizontal illuminance values not covered by this Practice, which may be defined by individual sports and/or broadcasting organizations.

- *Class II* - Competition play with facilities for up to 5000 spectators (see **Figure 2** in color insert).

- *Class III* - Competition play with some spectator facilities.

- *Class IV* - Competition or recreational play only (no provision for spectators).

Figure 1. This racetrack is lighted by clustered banks on individual structural towers to provide the lighting needs of both contestants and a large number of spectators.