

RP-37 Updates

IES Airports and Heliports Lighting Committee

Greg Reilly, P.E. – Vice Chair

Electrical Engineering Manager - **AECOM**

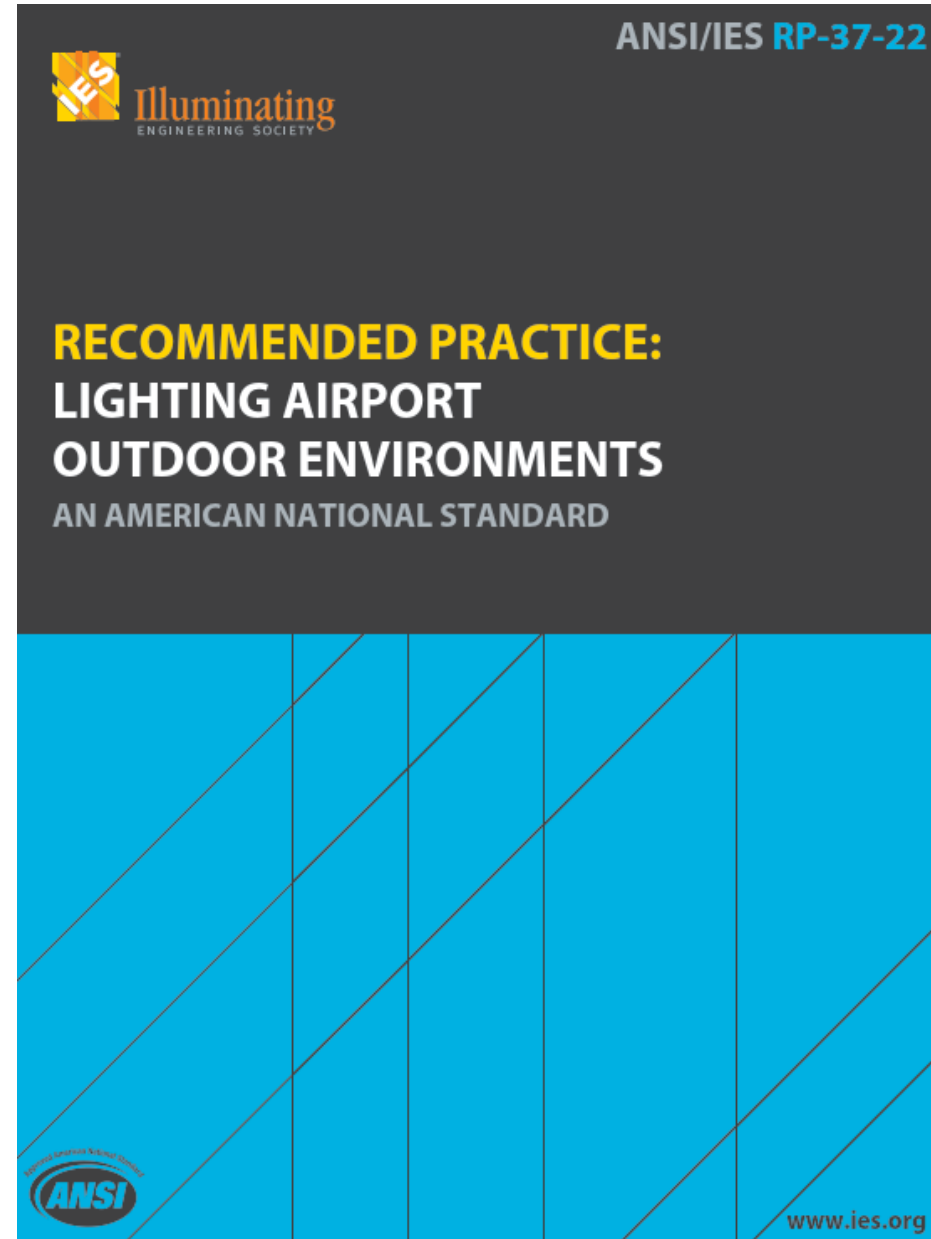
November 6, 2023



Agenda

What we'll cover

1. Overview of RP-37
2. RP-37 updates for 2022
3. Upcoming changes for RP-37
4. Future research



Overview of RP-37

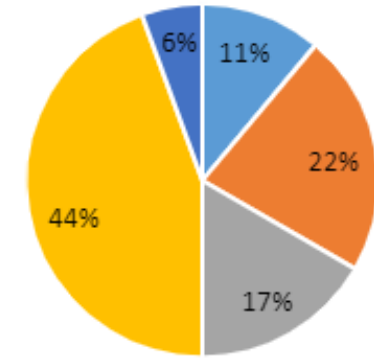
- Purpose:
 - Provide lighting recommendations for airside applications, landside applications, and adjacent development applications.
 - Guide for planning, design, and application of fixed outdoor lighting in and around the airport.
 - Considers outdoor lighting for aircraft servicing and pedestrian/vehicular movement in and around the airport.
- Scope:
 - Includes aircraft stands and apron areas, internal airport roadways, passenger loading and unloading areas as well as pedestrian walkways.
 - Excluded subject matter: illumination covered by other IES RP standards and airfield lighting covered by FAA standards.



Overview of RP-37

- Technical committee purpose:
 - Research and develop best practices for lighting spaces and functions involved in the operation of aircraft and spacecraft.
- Membership mix provides wide cross section of industry input
 - Consultants
 - Manufacturers
 - Airports/Airlines
 - Government/regulatory
 - Testing lab/equipment manufacturer

Airports & Heliports
Committee Voting Balance



- GENERAL INTEREST-Government, Regulatory (GGR)
- Producer (P)
- USER-Affected (UA)
- USER-Specifier (US)
- TESTING LABORATORY-Test Equipment Manufacturer (TEM)



RP-37 updates for 2022

- Characteristics of Heliport and vertiport areas
 - Defined subcategories
 - Heliport/vertiport vs. helistop/vertistop
 - Different lighting requirements at “stops” since no fueling, defueling, maintenance, repairs, or storage of aircraft
 - Final approach and takeoff area (FATO)
 - Touchdown and liftoff area (TLOF)
 - Safety Area



RP-37 updates for 2022

- Parking, passenger, and cargo areas
 - Floodlighting per apron lighting criteria in Annex A
- Helicopter maintenance and wash rack areas
 - Floodlighting where separate from parking apron
- Refueling / recharging points and fuel storage
 - Fixed, portable, or personal floodlighting



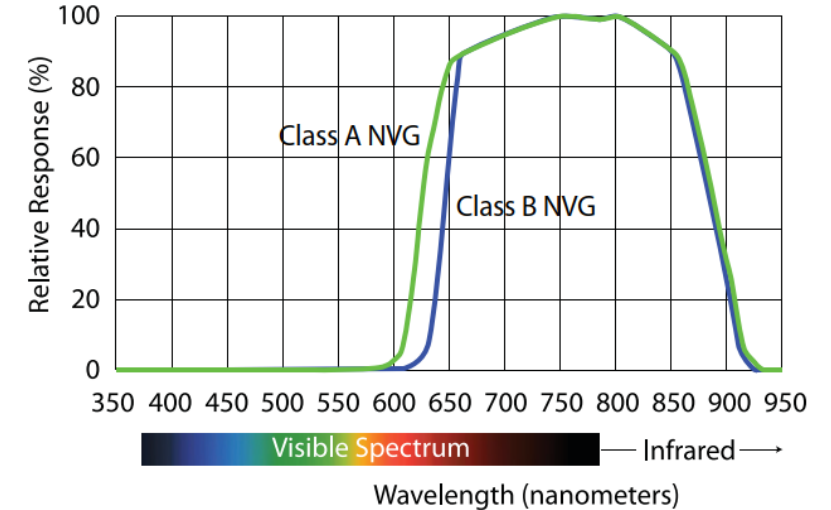
RP-37 updates for 2022

- Helicopter lighting precautions
 - Obstruction avoidance
 - Rotating blades + light poles = bad
 - Visual Interference
 - Lighting obstructions or conflicts to pilots' vision
 - Lighting activation/deactivation
 - Pilot, manual, or automatic controlled
 - Glare and reflectivity
 - Careful locating & aiming of floodlights
 - Avoid ponding water or reflective paint



RP-37 updates for 2022

- Night vision device compatibility considerations
 - Floodlighting compatible with night vision goggles (NVG)
 - Supplemental LED infrared illuminator floodlights
- Glare issues with incandescent/HID floodlights
- Consider floodlight positions, height, and tilt



RP-37 updates for 2022

- Design criteria for helipad apron floodlighting
 - Illuminance criteria per Annex A
 - Downward aimed light for TLOF, FATO, and parking areas
 - Light both sides of helicopter for loading, unloading, and refueling (horizontal & vertical illuminance)

Recommended Maintained Illuminance Targets ^(a, b)												
Veiling Reflection Risk Light Level for Task or Area?		TS = Task Surface: Recommended illuminances are at height of task surface above finished floor (AFF)										
		Horizontal (E _h)						Vertical (E _v)				
		Target E _h @ Height AFF			Uniformity Ratio			Target E _v @ Height AFF			Uniformity Ratio	
		C	A	Min	Max	Ratio	Basis	C	A	Min	Max	Ratio
APPLICATION TASK/AREA	Task or Area	T	Lux @ m	(Fc @ Ft)	Min	Ratio	Basis	T	Lux @ m	(Fc @ Ft)	Min	Ratio
EXTERIORS - AVIATION												
Aprons^{1, 2}: Commercial, General Aviation, Cargo, Hangar												
Aircraft parking position	A	H	20 @ 0.00	(2 @ 0.0)	Avg	4:1	Avg:Min	H	20 @ 2.00	(2 @ 6.5)	Avg	4:1
Aircraft service area ³	A	F	10 @ 0.00	(1 @ 0.0)	Avg	5:1	Avg:Min	F	10 @ 0.00	(1 @ 0.0)	Avg	5:1
Aircraft stands: Group I or Code A	A	H	20 @ 0.00	(2 @ 0.0)	Avg	5:1	Avg:Min	H	20 @ 2.00	(2 @ 6.5)	Avg	5:1
Cargo facility loading and unloading	A	K	50 @ 0.00	(5 @ 0.0)	Avg	4:1	Avg:Min	K	50 @ 2.00	(5 @ 6.5)	Avg	4:1
Mechanical checks, maintenance, repair	A	H	20 @ 0.00	(2 @ 0.0)	Avg	4:1	Avg:Min	H	20 @ 2.00	(2 @ 6.5)	Avg	4:1
Fueling operations	A	H	20 @ 0.00	(2 @ 0.0)	Avg	4:1	Avg:Min	H	20 @ 2.00	(2 @ 6.5)	Avg	4:1



Upcoming changes for RP-37

- Overall review edits
- Improved language about task function in Annex A
- Better pictures to explain the topics



OLD



OLD



NEW

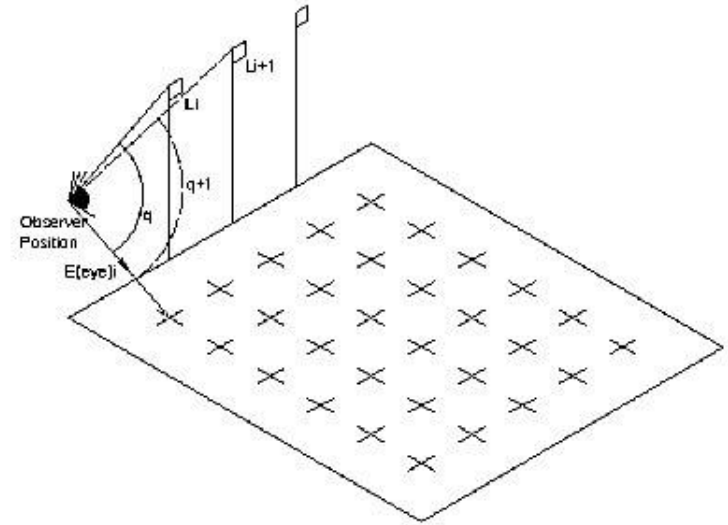


NEW



Upcoming changes for RP-37

- Limitations of BUG ratings and tilted fixtures
 - No longer U0 when tilted up
- Glare metrics
 - Glare rating (GR) and recommended max
 - $GR = (L_s / L_b) \times 100$
 - Lower number (percentage) = less glare
 - Calculatable during design
 - Glare rating calc grids in lighting software
 - Field verifiable with calibrated luminance meter on tripod



Future research

- Apron flood lighting
 - Light levels at tail of aircraft / beyond baggage handling
 - Light levels for pilot to park aircraft at the gate
 - Light levels necessary for ground handling staff & task lighting
 - Reduction of light levels scenario & impact on worker activities
 - LED vs. HID impacts on light levels



Future research

- Apron flood lighting
 - Glare criteria
 - Color Corrected Temperature (CCT) selection for flood and task lighting
 - Measurement techniques to confirm criteria
- Impact on aircraft visual guidance docking systems (VGDS)



Future research

- Low mounting luminaires at helipads



Comments/Suggestions for RP-37?

- ANSI/IES standard under continuous maintenance
- Comments by Dec 31, considered by June 30 next year
- Submit to IES Director of Standards
 - Forwards to committee chair for committee members review, response, and draft edits

Form for Proposing Change to an ANSI/IES Standard under Continuous Maintenance

NOTE: Use a separate form for each comment. Submit to the Director of Standards, IES, 120 Wall Street, 17th Floor, New York, NY 10005-4001. Email: standards@ies.org. Fax: 212-248-5017.

1. Submitter: _____
Affiliation: _____
Address: _____
City: _____ State: _____ Zip: _____ Country: _____
Telephone: _____
Fax: _____
E-mail: _____

I hereby grant the Illuminating Engineering Society (IES) the non-exclusive royalty rights, including non-exclusive rights in copyright, in my proposals. I understand that I acquire no rights in publication of the standard in which my proposals in this, or other analogous, form are used. I hereby attest that I have the authority and am empowered to grant this copyright release.

Submitter's signature: _____ Date: _____

2. Title of publications and year published _____

3. Clause (section), sub-clause or paragraph number; and page number: _____

4. My proposal (check one):

- ☐ Change to read as follows
- ☐ Delete and substitute as follows
- ☐ Add new text as follows
- ☐ Delete without substitution

Use underscore to show material to be added (added) and strikethrough for material to be deleted (~~deleted~~). Use additional pages if needed.

5. Proposed change:

6. Reason and substantiation:

Select as applicable:

- ☐ Additional pages are attached. Number of additional pages: _____
- ☐ Attachments or referenced materials cited in this proposal accompany this proposed change.

Please verify that all attachments and references are relevant, current, and clearly labeled to avoid processing and review delays. Please list your attachments here:



Contact Information.

Greg Reilly – Vice Chair
Electrical Engineering Manager - AECOM
greg.reilly@aecom.com

Thank you.