



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

7 DEC 2011

FROM: HQ AFCESA/CEO
139 Barnes Drive Suite 1
Tyndall AFB FL 32403-5319

SUBJECT: **Engineering Technical Letter (ETL) 11-27: Solar Lighting for Airfields**

1. Purpose. This ETL provides technical guidance and criteria for using solar light fixtures in airfield lighting systems.

2. Application. Requirements in this ETL are mandatory. Any deviations require written approval from the Air Force Airfield Lighting Engineer, HQ AFCESA/CEO.

2.1. Authority:

- Air Force instruction (AFI) 32-1044, *Visual Air Navigation Systems*
- Unified Facilities Criteria (UFC) 3-535-01, *Visual Air Navigation Facilities*

2.2. Effective Date: Immediately

2.3. Intended Users:

- Major command (MAJCOM) engineers
- Expeditionary base civil engineers (BCE)
- Base civil engineer squadron commanders

2.4. Coordination:

- MAJCOM electrical engineers
- United States Air Forces Central, Readiness Division (USAFCENT/A7X)

3. Referenced Publications.

3.1. Air Force (<http://www.e-publishing.af.mil>):

- AFI 32-1044, *Visual Air Navigation Systems*

3.2. Joint (http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4):

- UFC 3-535-01, *Visual Air Navigation Facilities*

3.3. Other Agencies:

- Federal Aviation Administration Advisory Circular (FAA AC) 150/5345-50, *Specification for Portable Runway and Taxiway Lights*, http://www.faa.gov/regulations_policies/advisory_circulars/
- FAA AC 150/5345-43, *Specification for Obstruction Lighting Equipment*, http://www.faa.gov/regulations_policies/advisory_circulars/

4. Acronyms:

AFI	- Air Force instruction
BCE	- base civil engineer
DRM	- distance remaining markers
FAA AC	- Federal Aviation Administration Advisory Circular
FAA	- Federal Aviation Administration
HQ AFCESA/CEOA	- Headquarters, Air Force Civil Engineer Support Agency, Engineer Support Branch
LED	- light-emitting diode
MAJCOM	- major command
UFC	- Unified Facilities Criteria

5. Background. In some situations, portable lighting that can be quickly and easily installed may be required to accomplish the mission, e.g., continuous electrical power for airfield lighting is not available or reliable, airfields and ranges are used for deployment training purposes only, or interim measures are needed to accomplish airfield repairs for which no alternate, temporary lighting source can be obtained.

6. Policy.

6.1. Solar-powered fixtures are approved for use in expeditionary locations, ranges, and areas used only for training for the following applications:

- Runway edge lights
- Threshold lights
- Taxiway edge lights
- Distance remaining markers (DRM)
- Obstruction lights

6.2. Runway/taxiway fixtures shall conform to the minimum intensity requirements in FAA AC 150/5345-50, *Specification for Portable Runway and Taxiway Lights*, Table 1, "Photometric Requirements." Solar-powered runway DRM shall meet the minimum luminance requirement of 10 to 30 foot Lamberts (fL).

6.3. Solar-powered, steady-burning, non-LED (light-emitting diode), red obstruction lights shall conform to the photometric requirements for L-810 light units in FAA AC 150/5345-43, *Specification for Obstruction Lighting Equipment*.

6.4. Additionally, solar fixtures are approved for continental United States (CONUS) installations for non-LED obstruction lights where 120-volt power is inaccessible or cost prohibitive, as determined by the MAJCOM electrical engineer; and for temporary uses to facilitate repair of sub-systems noted in paragraph 6.1, when required by UFC 3-535-01 to be operational, with a waiver from the major command installations and mission support directorate (MAJCOM/A7).

6.5. Fixtures shall have an integrated solar panel, with the exception of the obstruction light. Fixtures with integral batteries (inaccessible batteries that necessitate replacing the entire fixture rather than only the batteries) are not approved for use even if they are FAA-approved. Fixtures utilizing lead acid batteries are not approved for use due to lower comparable life with other battery types.

6.6. Fixtures shall be stored in accordance with manufacturer's instructions and shall not be stored in a location or manner where prolonged self-discharge will render the battery unserviceable (in most cases they cannot be stored in darkness).

7. Point of Contact. Recommendations for improvements to this ETL are encouraged and should be furnished to the Airfield Lighting Systems Engineer, HQ AFCESA/CEOA. The authority having jurisdiction on all matters discussed within this ETL is the Airfield Lighting Systems Engineer. To reach the Airfield Lighting Systems Engineer, e-mail afcesar@tyndall.af.mil, call DSN 523-6354 or commercial (850) 283-6354, or mail to 139 Barnes Drive, Suite 1, Tyndall AFB, FL 32403-5319.

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1 Atch
1. Distribution List

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