



## FAA/FCC Lighting, Marking, and Monitoring Requirements

FAA/FCC obstruction (“tower”) lighting is often described as “a necessary evil” by most owners and tenants of communications, broadcast, and other structures. It is one of the leading causes of FCC enforcement action and presents one of the greatest exposures to liability as a structure owner.

The regulatory requirements are ever-evolving and maintaining strict compliance requires a healthy dedication of time and resources to simply stay abreast of the developments and ensure proper installs are compliant with the regulations.

### Recent Developments/Changes in Regulations

In a previous PAN (September 2013 “FAA Obstruction Lighting”), we discussed the marking and lighting requirements. This PAN will address some of the recent changes to these Federal Aviation Administration (FAA) regulations. The FAA marking requirements, including lighting, have undergone substantial changes over the past two years. In the past, E-2 (Medium Intensity Dual: Flashing white in day mode and red in night mode) and D-2 (24 hour flashing white) lighting configurations were limited to a maximum height of 500’ AGL (Above Ground Level). This “ceiling” was increased to 700’ AGL with the publication of the FAA AC 70/7460-1L in December of 2015, allowing many owners of High Intensity lighting systems in that height range to switch to the lower maintenance, less costly Medium Intensity lighting configurations.

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Avian-friendly configurations were also introduced. Owners of red night lighting configurations that can attain a flash rate of 27-33 flashes per minute on structures over 350' AGL are now able to extinguish all steady-burn L-810 side marker (intermediate) lighting, provided the overall lighting configurations are compliant with the AC 70/7460-1L filing and achieve 360-degree visibility at each light level. The FAA AC 70/7460-1L does require that A-1 (Red medium intensity) and E-1 dual systems with determinations dated on or after 10/8/17 (-1L Chg 1) must have flashing L-810 side markers. The FAA determination letter for the site should always be referenced to ensure compliance.

Important items to note:

1. Failure of a flashing L-810 side marker light in a Medium Intensity configuration is a NOTAM (Notice to Airmen) worthy event, as opposed to the failure of a steady-burn L-810 marker which is NOT a NOTAM worthy event but should still be corrected as soon as possible.
2. Owners of pre - 1L determined structures must file with the FAA and receive an updated -1L determination prior to making these changes. All criteria



(configuration, flash rate, etc.) must be met for the lighting system to be compliant.

3. The FAA does not allow any obstruction larger than 7/8" diameter in the path of a Medium Intensity beacon at any level. There are no exceptions to this rule. For instance, a 1" diameter antenna mounted on a standoff 20' away from the beacon is still an obstruction. In the event the obstruction cannot be moved, another beacon may be mounted at that level to avoid an obstructed light.
4. Appendix A in AC 70/7460-1L Chg 1 has illustrated guidelines for proper installations. Figure A-14 depicts proper mounting to avoid obstructing the top beacon.

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Another requirement in the -1L directs owners to inspect all lighting lenses at the lens, not from the ground. Dirty, crazed, or otherwise damaged lenses must be cleaned or replaced. The FAA states "Due to the effects of harsh environments, light fixture lenses should be visually inspected every 24 months, or when the light fixture fails, for ultraviolet (UV) damage, cracks, crazing, dirt buildup, etc.,". This inspection can be done as a part of the tower maintenance and condition assessment, and it is recommended that structure owners clearly document this inspection process. The cycle chosen by the structure owner for this inspection should be created considering the environment, lighting system manufacturers recommendations, and lighting system communications and site access. If the lens has identified issues, replacement/correction is required. It should also be noted that the FAA has communicated that drone video which clearly shows the lens and includes a time and date stamp can be utilized as part of an overall maintenance program.

### Regulations on the Near Horizon

By now, most owners of structures requiring marking (lighting is technically marking) are aware of legislation to require marking structures between 50' – 200' AGL. Several of these tower types, mostly MET (meteorological) towers, were erected in the normal flight paths of crop dusters and other low-flying aircraft. Many of these structures were erected within 24 hours, and often without any advance notification. These towers were largely unmarked, gray galvanized, and blended into overcast skies, creating treacherous hazards in historically safe flying areas. Incidents occurred when some aircraft hit these structures.

Confusion occurred when state and local lawmakers began forming their own versions of filing and marking regulations, because they did not realize the FAA was already swiftly moving to address the problem. Congressional leaders stepped forward and, albeit in our opinion somewhat rough language, were able to gain



passage of H.R. 636. Section 2110 of this bill specifically addressed "covered towers" in the 50' – 200' AGL range.<sup>1</sup>

Leadership from the FAA, NAAA (National Agricultural Aviation Association), and several leading industry groups including NATE, NAB, WIA, TIA, and others came together and negotiated a commonsense agreement that the congressional leaders adopted. At this point in time, the FAA will maintain discretion and ownership in defining the final version of the requirements for these structures under 200'. Owners and sponsors of covered towers will be required to file with the FAA but will not be required to mark any tower that would not currently require marking due to proximity to an airport or other reason. There is one exception: MET towers will now require filing. Marking/lighting may be required on MET towers based on the findings of the determination letter.

### FAA and FCC: The Regulations and Relationship

At the time of this publication, the FCC has the capability to issue fines, while the FAA does not. However, this does not diminish the FAA's authority. Citing Federal Aviation Regulation (FAR) Title 47, the following statements are published on the FCC.gov website: "The FCC has been given the authority by Congress to require the painting and/or illumination of antenna towers when it determines that such towers may otherwise constitute a menace to air navigation. The FCC's rules governing antenna tower lighting and painting requirements are based upon the advisory recommendations of the FAA, which are set forth in two FAA Advisory Circulars [AC 150/5345-43 & AC 70/7460-1]. Although the FAA's lighting and painting standards are advisory in nature, the FCC's rules make the standards mandatory. The standards and specifications set forth in these FAA documents are incorporated by reference into the FCC's rules, making these advisory standards mandatory for antenna towers." Antenna supporting structures include towers, buildings, bridges, chimneys, poles, water tanks, silos, grain or concrete elevators, and even trees.



**A Note on “Responsible Parties”**

In CFR 27.56, the FCC states “A licensee that owns its antenna structure(s) must not allow such antenna structure(s) to become a hazard to air navigation. In general, antenna structure owners are responsible for registering antenna structures with the FCC if required by part 17 of this chapter, and for installing and maintaining any required marking and lighting. However, in the event of default of this responsibility by an antenna structure owner, the FCC permittee or licensee authorized to use an affected antenna structure will be held responsible by the FCC for ensuring that the antenna structure continues to meet the requirements of part 17 of this chapter.”

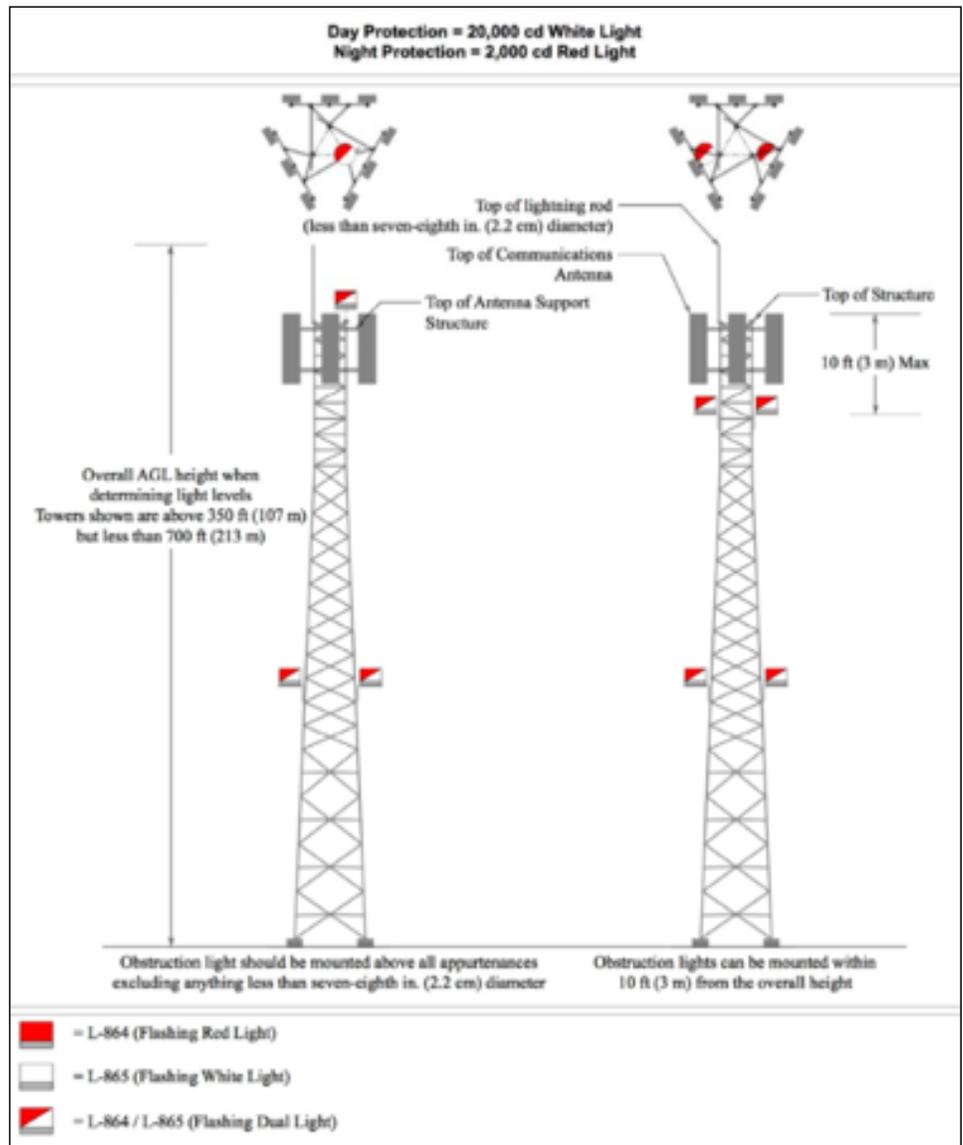
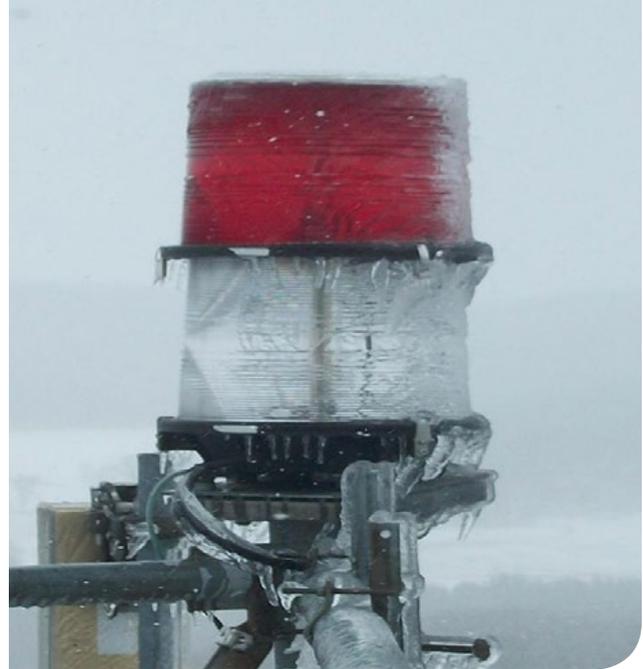
FCC “Part 17.6 Responsibility of Commission licensees and permittees” adds “In the event of non-compliance by the antenna structure owner, the Commission may require each licensee and permittee authorized on an antenna structure to maintain the structure, for an indefinite period, in accordance with the Antenna Structure Registration (FCC Form 854R) and the requirements of this Part.”

**FAA Determination Letters**

Once the FAA has completed an aeronautical study, a determination is issued regarding the impact to air navigation. One of three responses is typically issued and is commonly referred to as a determination letter:

- Determination of No Hazard – The subject construction did not exceed obstruction standards and marking/lighting is not required.
- Determination of no hazard with conditions – The proposed construction/alteration would be acceptable contingent upon implementing mitigating measures such as the marking and lighting of the structure.

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**Figure A-14. Medium-Intensity Lighting Establishing the Location of top Beacons**

- Determination of Hazard – The proposed construction/alteration is determined to be a hazard to air navigation.

This critical document establishes the height allowed, marking and/or lighting system type, location and other key items. A proper review of the determination letter by the owner is critical, however a contractor should always request a copy of the determination letter when erecting a structure or modifying the lighting system to ensure that the install or modification does not impact compliance with the determination letter. Many times, a qualified contractor can ensure that the owner is compliant by reviewing the letter and verifying that their install is in compliance with the FAA's determination.

It should be noted that when there are changes to the marking and lighting, like going from a red only system to dual lighting, it is required to update the filing with the FAA. The FAA will then issue a new determination letter if the modification to marking and lighting is accepted.

### Proper Monitoring

Monitoring and documentation are fundamental components to the safety of a communication structure. Key requirements are found in both the FCC and FAA regulations. Though visual observation once every 24 hours is still acceptable, there are many advantages to automated monitoring. The FCC monitoring requirements are outlined in CFR Title 47, sections 17.47, 17.48, and 17.49. Current FAA requirements are found in AC 70/7460-1L Change 1 and AC 150/5345-43H. Primarily, the regulations require:

1. If visually monitored, the tower lighting or a properly maintained indicator designed to register the failure of the lighting must be observed once every 24 hours in each mode to ensure that all lights are functioning properly.
2. If monitored by automated means, the monitoring system must be designed to detect any failure (failure is defined as an outage, four or more consecutive missed flashes, or flashing at the wrong intensity during daylight operation) of the lights and provide indication of such failure to the owner. The monitoring system must be inspected every 90 days to "ensure that such apparatus is functioning properly" per CFR Title 47 section 17.47.
3. The FAA states in AC 70/7460-1L Change 1: "Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately by calling 877-487-6867, for Alaska 800-478-3576, so a NOTAM can be issued."



The FAA goes on to describe the information you should have available when making the call. NOTAMs are no longer limited to 15 days and may be opened for a longer period provided you have a good reason for the extended time.

4. In addition to maintaining a log of the 24-hour observation, the 90-day or annual inspection, the outages and reporting, the FCC requires a full description of the repairs made to correct the outage. Per CFR Title 47 section 17.49, the description should include "the date, time and nature of adjustments, repairs, or replacements made."

This PAN is intended to provide an overview and some points listed above are abbreviated. Structure owners and tenants should read and understand all related FCC and FAA regulations thoroughly.

### In Conclusion

The FAA and FCC, along with industry representatives, are currently working to streamline several processes. Many of the processes affect Aviation Obstruction Lighting, Marking, and Monitoring. Taking an active role in associations such as NATE, NAB, WIA, TIA is one way to stay abreast of current regulatory action as well as developing requirements, and allow you to take the correct steps to maintain compliance, often avoiding unnecessary FCC enforcement actions and mitigating liability risks before they become costly.

<sup>1</sup> Covered towers are those in the specified height range outside city or township limits, 10' or less in diameter, on undeveloped or farmed land, and are NOT adjacent to a house, barn, electric utility station, or "other building", within the curtilage of a farmstead, not a powerline support structure, not a wind turbine, and do not provide support for a federal, state, municipal, or tribal streetlamp support structure. For additional information, please refer to section 2110 of the H.R. 636.

<sup>2</sup> This is often referenced as the QLI or Quarterly Lighting Inspection and may be waived to annual inspection upon application to the FCC, provided the automated monitoring system and monitoring methods meet a stringent set of criteria. Some third party monitoring services have gained FCC approval and are able to offer their customers "automatic" approval for the waiver provided the lighting system controller offers adequate alarm capabilities. ■