



Federal Aviation  
Administration

# **Illuminating Engineering Society (IES) Government Contacts Sub-Committee Meeting**

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***Navigation Program,  
Lighting Systems Team***  
***AJM-3222***

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# Overview

- Navigation Programs
- Lighting Systems Team Initiatives
- Specifications
- Procurement Opportunities
- Lighting Systems Team
- Conclusion



# Navigation Programs

- **What we do:**
  - We offer solutions to meet or exceed customers' needs for providing safe, reliable, and cost effective Navigation Services to the National Airspace System (NAS), its customers, stakeholders, and employees.
- **Navigation Services cover projects in the following areas:**
  - Global Navigation Satellite System
  - Ground Based NAVAIDS and Lighting
  - NAS Implementation
- **Responsibility :**
  - We define, develop, acquire, deploy, maintain, sustain, decommission, and Improve Lighting Products and services for the NAS.



# Improvement of Lighting System Goals

- To synergize the historically navigational visual aids and the current and emerging cockpit equipment to enable safe, efficient, and effective NAS operations – in the air and on the ground.
- Continue forward movement/increased benefits.
- Do no harm



# Tactical and Strategic Challenges

- Energy efficient lights are installed on taxiways and navigation that are not visible with today's enhanced vision systems
- Enhanced Flight Vision Systems (EFVS) were designed and manufactured based on using the IR signatures of incandescent lights as the input
- US statute requires the start of phasing out incandescent PAR 38 lamps by 2012
  - **(MALSR) uses PAR 38 lamps**
- ALS' require large amounts of real estate be cleared and maintained and large numbers of lamps to be illuminated to provide visual cues to pilots



# Desired Outcomes

- Suggest a means to harmonize visual aids with enhanced vision systems that does not impede technology improvements and moves us forward.
- Suggest a means to reduce the footprint of ALS to maintain/improve capabilities at a lower life cycle operational cost.
- Suggest a realistic program/approach to reaching the solution.
- Drive/Insert technology both on the ground and in the air as appropriate to support the goal.
- Help us find the best path that maximizes benefits.



# Lighting Systems Team Projects

- MALSR LED Replacement Lamp Project
- PAPI LED Project
- REIL LED Project
- Footprint Reduction Feasibility Project



# MALSR LED Replacement Lamp Project

- **Objective:** To determine the LED/IR Lamp requirements through a system engineering process by developing requirements and evaluating concepts which includes prototype tests and operational capabilities demonstrations.
  - **Phase I:**
    - Conduct Feasibility Study to determine if integrating IR into a LED Par 38 and Par 56 fixtures is achievable.
  - **Phase II:**
    - Procure prototype MALSR LED replacement lamps and conduct Confidence Test
    - Procure MALSR LED replacement lamps and conduct an Operational Capability Demonstration with EFVS-equipped aircraft
  - **Phase III:**
    - LED Lamp First Article development
    - Design Qualification Tests
    - FAA Operational Evaluation





# LED PAPI Project

- **Objective:** The primary objective is to fully deploy LED PAPI by using the System Development, Deployment and Implementation phases of FAA's Acquisition Management Systems (FAMS) process.
  - **Project Activities**
    - Preliminary Design Review
    - Critical Design Review
    - **Design Qualification Test**
    - Operational Test
    - Configuration Audits
    - Product Baseline
    - In-Service Management



# LED REIL Project

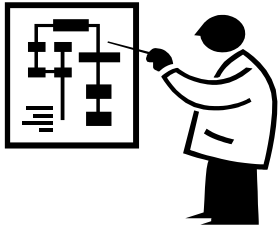
- **Objective:** The primary objective is to develop LED REIL by using the System Development, Deployment and Implementation phases of FAA's Acquisition Management Systems (FAMS) process.
  - **Project Activities**
    - Evaluate Proof of Concept
    - Conduct Design Reviews
    - Conduct Design Qualification Review
    - **Test Readiness Review**
    - Conduct Operational Test



# *Footprint Reduction Feasibility*

- Investigate the feasibility of reducing the current ALS Footprints (medium and high intensity) and provide proposed reduced footprints and/or light patterns while still maintaining the same level of effectiveness to support Categories I, II and III Instrument approach procedures.
- Establish alternative ALS footprint concepts supported by human factors and system design analyses
- Engage users, industry, academia, and lighting experts
- Assemble an FAA Technology Lighting (FATL) Team, consisting of Navigation Services, Flight Standards, Airports and Technical Center to establish metrics to be used to evaluate various approach lighting system configurations.
- Revalidate historical lighting system standards





# Specifications

## Approvals and Updates

### Specifications

- **Semi-Flush Flasher Specification (FAA-E-2998)**
  - Approved (August 2011)
- **MALSR Specification (FAA-E-2890)**
  - Anticipated Approval (April 2013)
- **ALSF-2 Specification (FAA-E-2689)**
  - Anticipated Approval (August 2013)

### Reason for Changes

- LEDs
- Color Boundaries
- Photometrics
- Design vs. Performance
- Consolidation of Equipment
- Changes in Standards
- Changes in Testing Requirements
- Outdated Specifications



# Procurement Opportunities

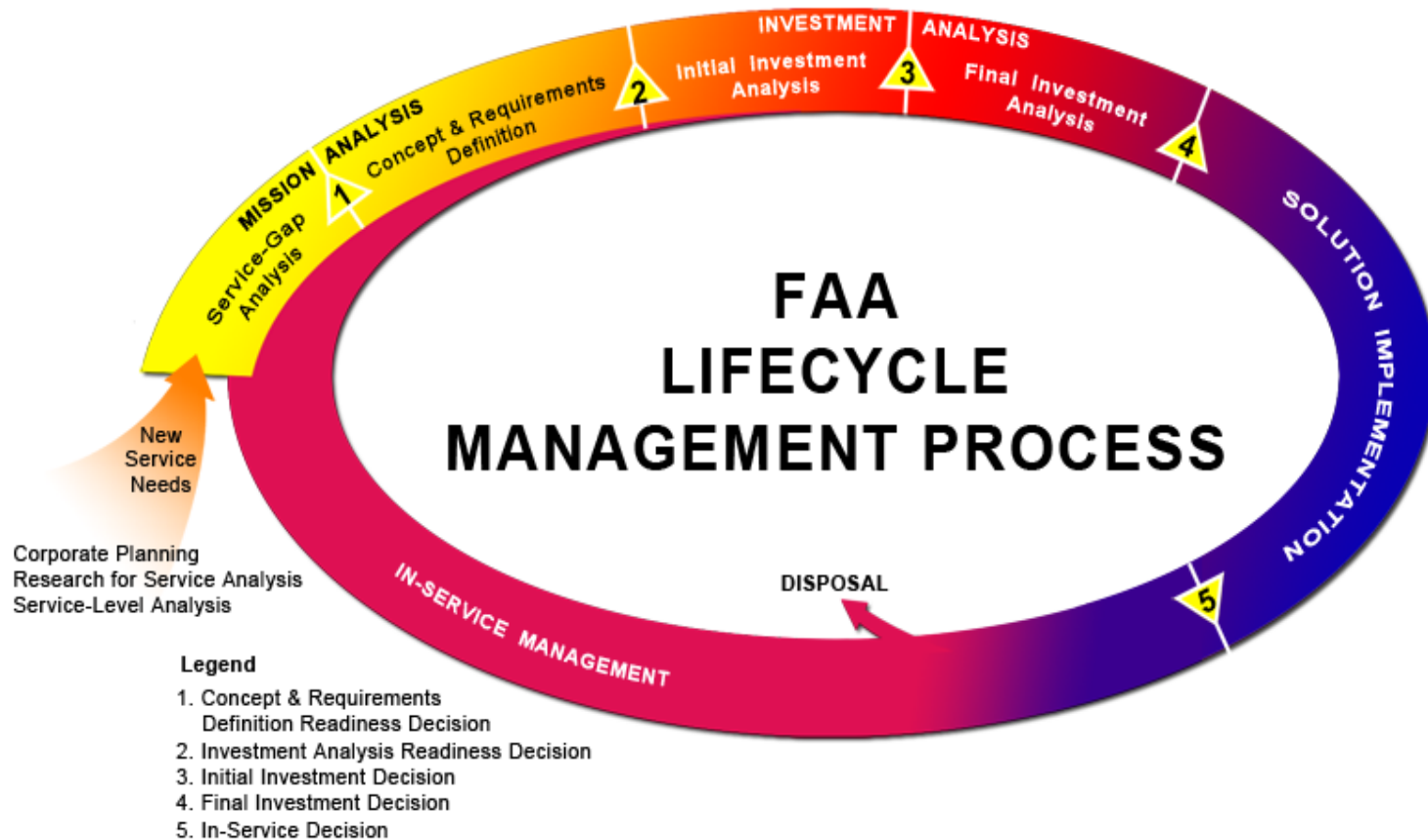
- **Steady Burning Semiflush Fixtures**
  - Release Procurement Information by 2<sup>nd</sup> Qtr FY13
- **New Approach Lighting System Feasibility Study**
  - Release Procurement Information by 2<sup>nd</sup> Qtr FY13

FAA Contracting Opportunities website: <https://faaco.faa.gov/>



# Acquisition Management Systems (AMS)

- <http://fast.faa.gov/>



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# Conclusion

- Strong Industry and Academic Involvement is a Must for us to Improve Lighting Products
- The Lighting Systems Team Looks Forward to Working with Industry and Academia

