

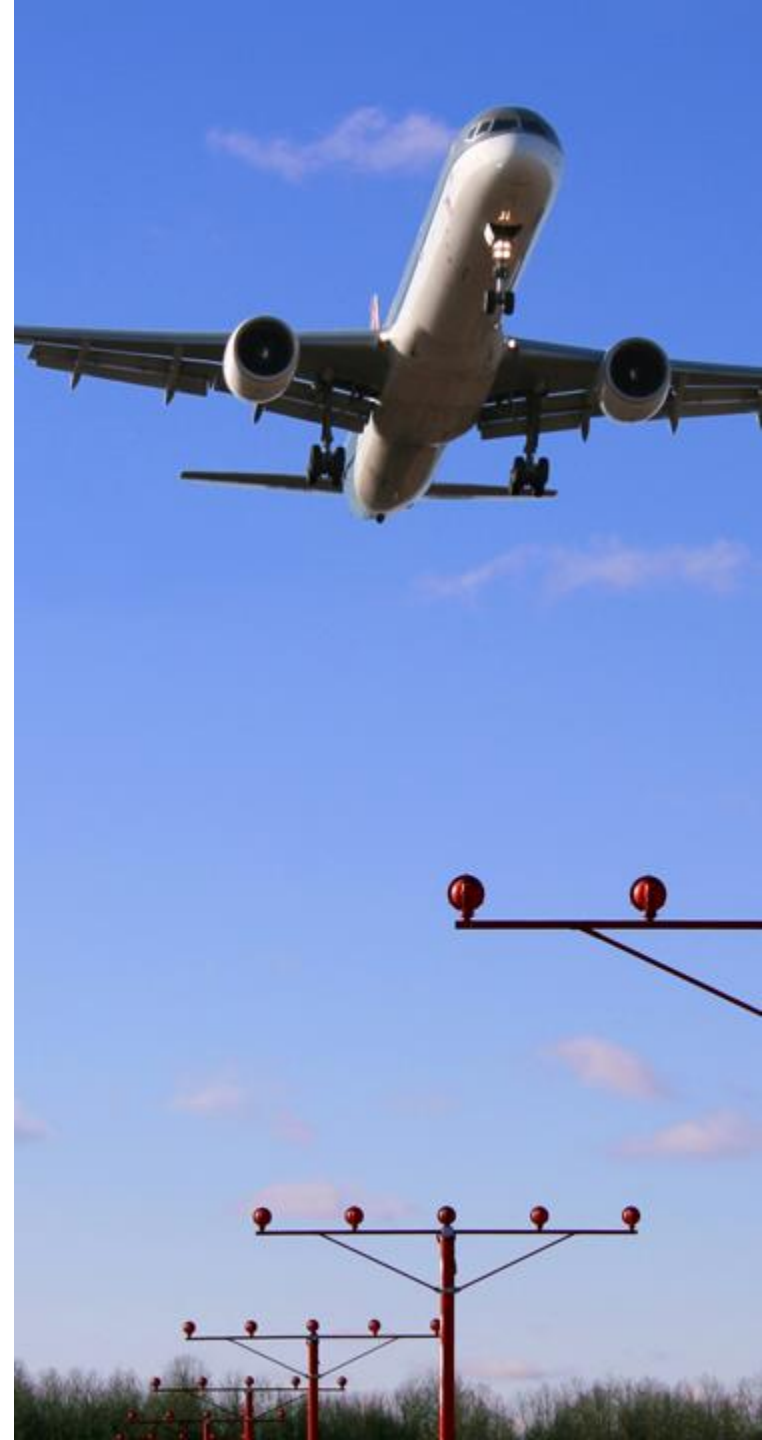
Illuminating Engineering Society (IES) Government Contacts Sub-Committee Meeting

Ndubuisi Nnorom

Visual Guidance Lighting Systems

AJM-3220

May 20, 2020



Overview

- **Lighting Systems Team**
- **Lighting Systems and Ancillary Equipment**
- **Capital Investment Programs**
- **Active Procurements**
- **Next Generation Lighting Systems**
- **Specification and Standard Installation Updates**
- **Procurement Opportunities**
- **COVID-19 Impact**



Lighting Systems Team Contact Information

Name	Projects	Phone
John Varas	Manager	202.267.4539
Renee Williams	RVR, LEDs, LIR	202.267.9923
Ndubuisi Nnorom	ALSF-2, RRCS, RLMS, REIL	202.267.9923
Donald Lampkins	MALSR, PAPI, LEDs	202.267.7332
Nikita Lawhorn	Business Manager	202-267-7998



Lighting Systems and Ancillary Equipment

- **High Intensity Approach Lighting System with Sequenced Flashing Lights (ALSF-2)**
- **Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR)**
- **Precision Approach Path Indicator (PAPI)**
- **Runway Visual Range (RVR)**
- **Runway End Identifier Lights (REILs)**
- **Radio Remote Control System (RRCS)**
- **Visual Approach Slope Indicator (VASI)**
- **Radio Remote Control Interface Unit (RRCIU)**
- **Replacement Lamp Monitoring System (RLMS)**
- **Lead-in Lights**
- **Semiflush Flashers and Steady Burners**
- **Low Impact Resistant (LIR) Structures**
- **Transformers**
- **Frangible Bolts**

Capital Investment Programs

- **Runway Visual Range**

Replace older RVR equipment with PC-Based RVR equipment. RVR provides air traffic controllers with a measurement of the visibility at key points along a runway: touchdown, midpoint and rollout.

- **Approach Lighting System Safety Enhancement**

Upgrade the equipment to current standards and reduces the potential severity of take-off and landing accidents by replacing rigid structures, and the entire approach lighting system, with lightweight and low-impact structures that collapse or break apart upon impact.

Capital Investment Programs

- **Nav aids – Sustain, Replace, Relocate (NSRR)**

Sustain and/or replaces Approach Lighting Systems (ALS). The ALS includes MALSR for Category I approaches and ALSF-2 for Category II/III approaches. Additionally, NSRR supports the REIL and RLMS projects.

- **Visual NavAids for New Qualifiers**

Support the procurement, installation, and commissioning of PAPI systems and REIL systems at new qualifying runways.

Capital Investment Programs

- **Replace VASI with PAPI**

Supports the procurement, installation, and commissioning of PAPI systems in order to comply with ICAO's recommendation to replace the VASI lights with PAPI lights.

- **Instrument Landing Systems**

Supports the installation of ILS and/or High Intensity Approach Lighting System. An ILS precision approach system is comprised of a grouping of electronic devices Localizer, Glide Slope, marker beacons and, in some cases, ancillary aids (DME, ALS, RVR, etc.)

Active Procurements

ALSF-2/RLMS; LED PAPI; RVR; AIL; RRCS; RRCIU; and MALSR

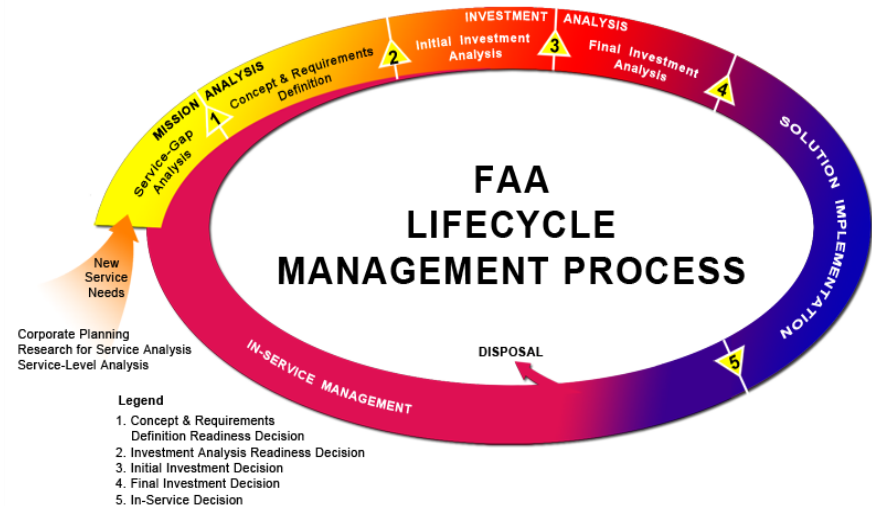


ALSF-2/ RLMS Project

- **Objective:** The primary objective is to procure and deploy ALSF-2/RLMS systems to support In-Service Management of FAA's Acquisition Management Systems (AMS) process.

- **Project Activities**

- Preliminary Design Review
- Critical Design Review
- Design Qualification Test
- Operational Test
- Configuration Audits
- Product Baseline
- **In-Service Management**

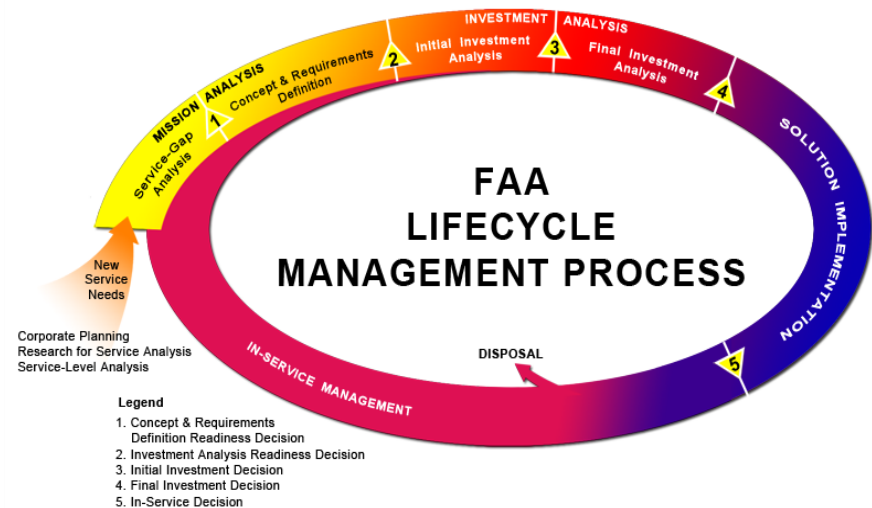


LED PAPI Project

- **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 (AMS) process

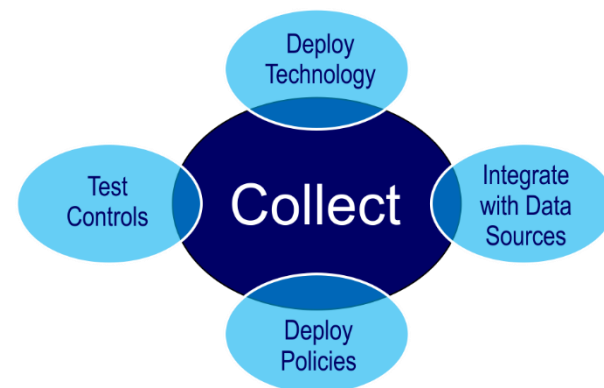
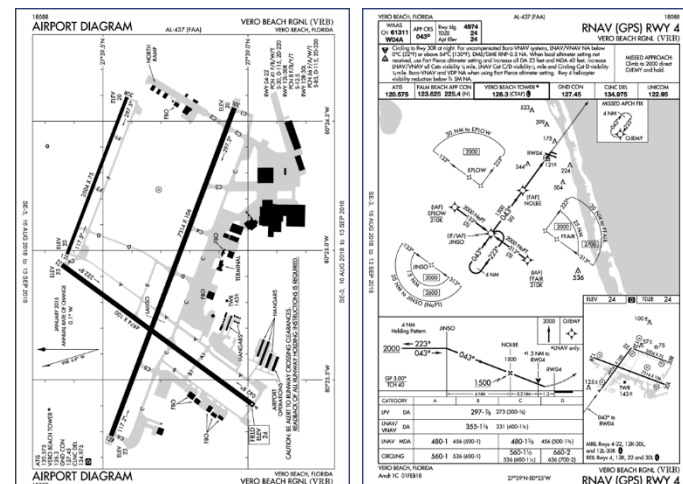
- **Project Activities**

- Preliminary Design Review
- Critical Design Review
- Design Qualification Test
- Operational Test
- Configuration Audits
- Product Baseline
- **In-Service Management**



LED PAPI Operational Analysis

- Installed and Commissioned LED PAPI systems at 41 sites
- Collecting and analyzing reliability, maintainability, availability (RMA) and supportability data



LED PAPI

stakeholder feedback

Technicians...



"No significant failures over the 8,100 hours of operation."



"Far less maintenance time since information is readily available on the display."



"LED PAPI is by far our best performing piece of equipment."

Pilots...




Q. With respect to brightness, the PAPI was easily identified. A. 100% responded "Strongly Agree."



"Perfect to Touchdown."



"LED Lights Outstanding!!"



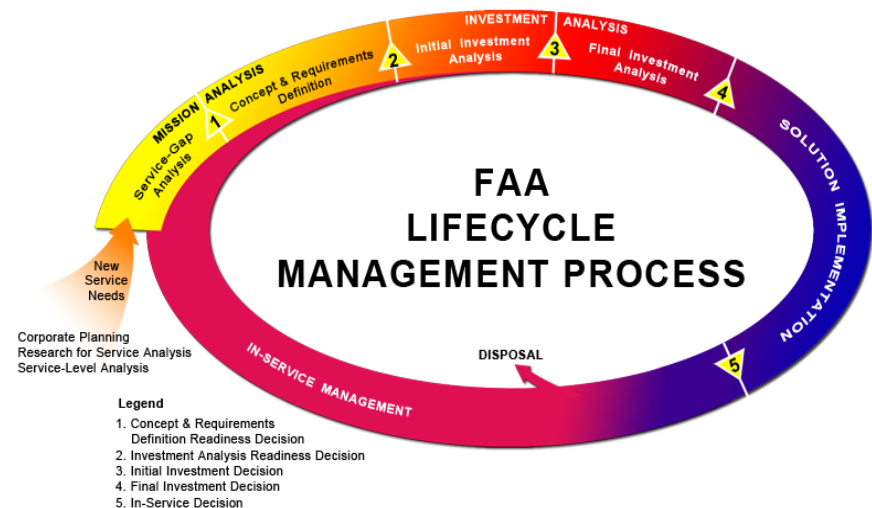
50%
Reduction in energy consumption.

Runway Visual Range (RVR) Project

- **Objective:** The purpose of this project is to procure PC-Based RVRs (Type FA-19200) and subcomponents for the replacement of New Generation RVR (NG RVR) systems in the National Airspace System (NAS).

- **Project Activities**

- Preliminary Design Review
- Critical Design Review
- Design Qualification Test
- Operational Test
- Configuration Audits
- Product Baseline
- **In-Service Management**



Alternative Incandescent Lamps (AIL) Project



- **Objective:**
 - To approve AIL to support over 900 MALSR systems
- **Issue:**
 - GE discontinued lamps used in the MALSR system. Replacement Lamps are difficult to find.
- **Status:**
 - Tested four (4) lamps for photometric, chromaticity
 - Amglo (53w HIR)
 - Amglo (60w Halogen)
 - Sylvania (60w)
 - BLC (120W)

Alternative Incandescent Lamps (AIL) Project

- **Requirements**

- The steady burning light beam pattern must be circular in shape.
- The steady burning main-beam pattern must be +/- 8°.
- Input Voltages
 - Low (50V)
 - Medium (75V)
 - High (120V)

Steady Burning Main Beam Avg. Intensity (cd)					
Low (4%)		Medium (20%)		High (100%)	
Min	Max	Min	Max	Min	Max
320	480	1600	2400	8000	12000

- **Recommendations**

- Amglo (60W): 60PAR/38HIR/SP10/130B/AK
- BLC (120W): PAR38SP120V120W
- Sylantia (60W): 60PAR38/HAL/IR/SP10/DL

Next Generation Lighting Systems

LED MALSR; LED ALSF-2; LED REIL



Roadmap to the Future

- **Transition from current PAR-38 and PAR-56 incandescent lamps to energy efficient LED technology**
 - Developing alternative LED lamps that can use existing lamp fixtures to minimize cost of conversion
 - Establish a transition plan to replace incandescent lamps
 - Rely on LED technology to improve reliability and maintainability and reduce ops costs

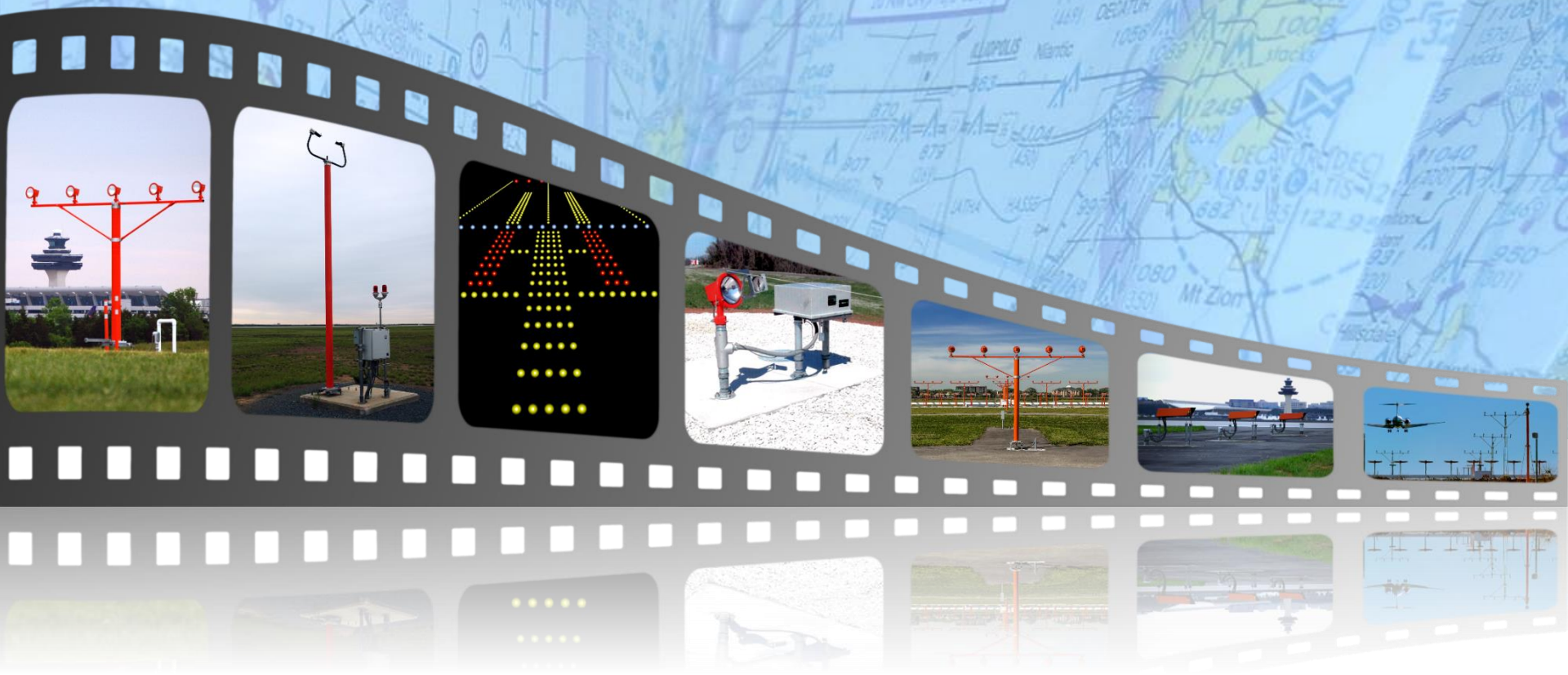


LED Project Activities

- Incorporated Brightness to Luminous B/L ratio of 1.6 for white LEDs
- Conducted Flight Demonstration at FAA Technical Center to specifically address brightness issue
- Conducted EVFS Demonstration at Juneau, AK to collect images during low visibility condition using EVFS and Natural cameras.
- Installed LED PAR-38s at Savannah/Hilton Head Airport (SAV)
- Conducted Duration Testing at Joint Base Cape Cod (JBCC) in IFR conditions using EVFS and Natural cameras
- Tested LED PAR-56 Prototypes at FAA Technical Center
- **Conduct Environmental Testing on LED PAR-56 Prototype**
- **Install LED PAR-38s at four (4) MALSR operational sites**



Specifications, Drawings and Procurement Opportunities



Specification Updates

- **LED REIL**; *Approved (Mar 2018)*
- **6850.2C Lighting Siting Criteria**; *Anticipated Approval (Sept 2020)*
- **LED PAR-38 and LED PAR-56**; *Anticipated Approval (Mar 2021)*
- **LED MALSR**; *Anticipated Approval (July 2021)*

Reasons for Change
<ul style="list-style-type: none">▪ LEDs▪ Changes in Standards▪ Color Boundaries▪ Photometrics▪ Changes in Testing Requirements▪ Design vs. Performance▪ Outdated Specifications

MALSR Specification

- Specification will include requirements for an all LED MALSR System
 - Above ground and semi flush fixture
- Mechanical and structural requirements in **FAA-E-2968** (*Steady Burning Semiflush*) will not change
- Mechanical and structural requirements in **FAA-E-2628** (*Sequenced Flashing Light System, Elevated and Semi-Flush*) will not change
- No requirement for infrared (IR) in a LED MALSR systems
- Waiver for Remote Maintenance System (RMS) capability for the MALSR system is still valid
- Sequenced Flashing Light requirements for LEDs may change

Standard Installation Drawings

- Established a Working Group to update Lighting Systems Standard Installation Drawings
 - Working Group members:
 - Civil and Electrical Engineers
 - WSA, CSA, ESA, HQ

Update Summary

- Outdated Drawings
- Changes in FAA Standards (ie., FAA-STD-019)
- Improve Drawing Layout
- Outdated Specifications
- Comprehensive Drawing Package

Standard Installation Drawings



- Standard PAPI Drawings approved 2019.



- Standard REIL Drawings approved 2018

Standard Installation Drawings

- MALSR Drawings 90% completed
- Anticipated Approval December 2020



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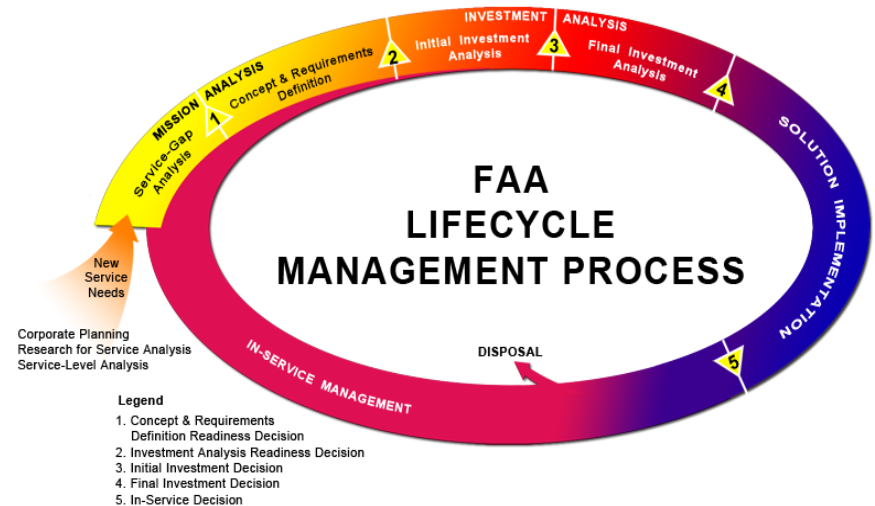
Procurement Forecast

- Incandescent PAR-38
- LED PAR-38/PAR-56
- RVR
- LED PAPI
- RRCS

Note: You should monitor the Beta.Sam Website for procurement opportunities

website: <https://beta.sam.gov/>

Disclaimer: This forecast is for informational and marketing purposes only and does not constitute a specific offer or commitment by the FAA to fund in whole or in part any of the procurements referenced herein.



COVID-19 Impacts

- **Major impact to Lighting Implementation Projects**

Lighting Projects	Delayed	Stop	No Impact
196	123	31	42

- The implementation projects especially the site surveys, constructions and installations projects are impacted by COVID-19 pandemic. Only the design related works are ongoing as well as re-planning associated with any projects impacted by COVID-19
 - The implementation team currently in a posture of maximizing telework for all their employees in the three service areas as a safety measure
 - No definitive re-start date
- **Minimal impact on Acquisition Projects**
 - Most vendor manufacturing facilities are classified as essential services. Production and delivery of the FAA equipment are on-going
 - Most works done by teleworking using Government Zoom Video link
 - All travel related meetings are affected. No travelling is allowed

Questions?

