



# AIRPORT TECHNOLOGY R&D VISUAL GUIDANCE RESEARCH

Presented to: IES ALC Government Contacts Mtg.

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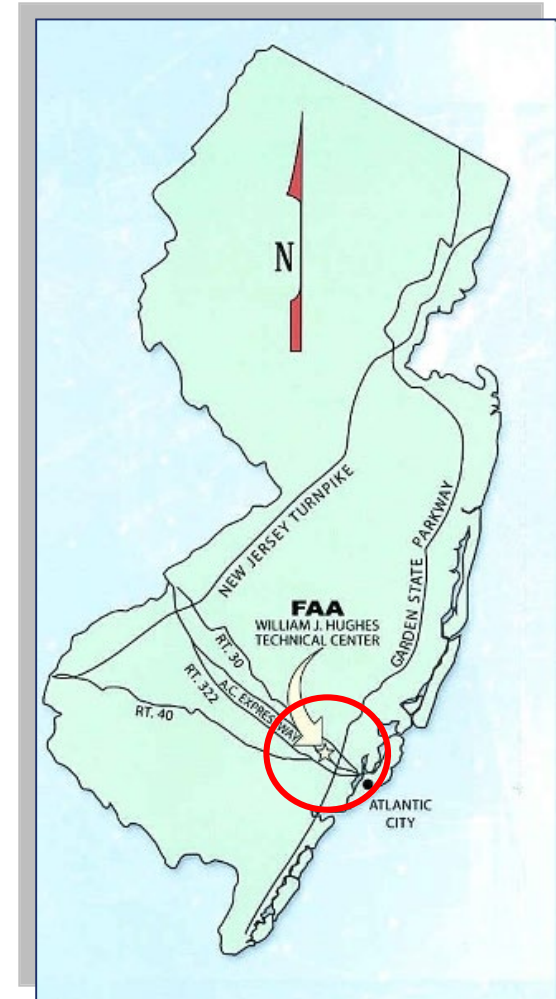
Federal Aviation  
Administration



# FAA William J. Hughes Technical Center at ACY



**3,000 Federal/Contractor Employees**  
**1,000 non-FAA Tenants**  
**Over 5,000 Acres**



# Who are we?

## FAA Airport Technology R&D Branch (ANG-E26)

**Airport Safety R&D Section**

**Airport Pavement R&D Section**

**Mission:** Conduct the necessary research and development required to enhance the safety of operations at our nation's airports and to ensure the adequacy of engineering specifications and standards in all areas of the airport systems and, where necessary, develop data to support new standards.

<http://www.airporttech.tc.faa.gov/>



# FAA

## Airport Technology R&D Branch

### Program Sponsors:

- **FAA Office of Airport Safety and Standards**
  - Airport Engineering Division (AAS-100, 110 and 120)
  - Airport Safety and Operations Division (AAS-300)
- **FAA Office of Planning and Programming**
  - Planning and Environmental Division (APP-400)
- **FAA Lighting Systems Office**
- **Other FAA Lines of Business as needed i.e. Air Traffic Organization & Flight Standards**

*Research is funded under the Airport Improvement Program (AIP)*

# FAA Airport Safety

## Research Program Areas (RPA)s

### Visual Guidance

- Lights, Signs, Paint/Markings, LEDs, IR, Other Visual Cues, Incursion Reduction, Electrical Infrastructure, Photometrics, Obstruction Lighting, Lighting Innovations, Heliports, NAS Vis Aides, Special Projects

### Airport Planning & Design

- RIM, Trapezoidal Grooves, Runway/Taxiway Design, Capacity, Spaceports, Design Standards

### Runway Surface Safety Technology

- Runway Friction, CFMEs, Winter Ops, TALPA RCAM, Deicing, EMAS, FOD Detection

### Unmanned Aircraft Systems (UAS) Integration at Airports

- Airport Applications and Detection

### Wildlife Mitigation

- Avian Surveillance/Deterrence (Radar), Wildlife Strike Data Collection/Analysis, Wildlife Management

### Aircraft Braking Friction

- Aircraft braking performance on contaminated surfaces

### Airport Safety & Surveillance Sensors

- Low cost surveillance, AeroMACS, Sensor Technology

### Airport Noise & Environmental

### Aircraft Rescue and Fire Fighting (ARFF)

- ARFF Vehicles, Firefighting Systems, FF Agents, Tools, Composites, Technology, New Large Aircraft (NLA) Strategies & Tactics, Agent Methodology, NFPA/ICAO Stds

# RPA S5 – Visual Guidance

## Sub RPAs

### Airport Lighting and Infrastructure

- Light fixtures
- Frangibility connections
- Airport electrical infrastructure
- Light Emitting Diode (LED) integration
- LEDs with infrared (IR) emitters
- Solar powered lighting & infrastructure
- Heliport/Vertiport lighting
- Obstruction Lighting

### Lighting Innovations & Special Projects

- New airport lighting concepts
- Special Project – Wrong surface landing research
- FAA Research Taxiway
- FAA Photometric Laboratory
- Cooperative Agreement – Rensselaer Polytechnic Institute's Lighting Research Center

### Airport Surface Markings Signs, and Vehicle Operations

- Airport signs
- Surface markings
- Vehicle operations with lighting and marking
- Runway incursion reduction

### National Airspace System (NAS) Visual Guidance

- Approach lighting systems (e.g., MALSR)
- Visual NAVAIDS, (e.g., PAPI, VASI)
- VGSI Baffle Installations
- LED lamps with IR emitters (ATO Lighting Systems)
- Atlantic City Int'l Airport, Rwy 4 Experimental MALSR

# Airport Technology R&D Visual Guidance Research

- **Lighted X Runway Closure Marking**
- **Parallel Runway Closure Conspicuity**
- **FAA Research Taxiway**
- **Evaluation of Solar Lighting Systems on Airports**



# Lighted X Runway Closure Marker

- **Laboratory experiments performed at NIST**
- **Findings suggest evaluations of larger RCMs and intensities**
- **Field evaluations Test Plan complete**
- **Custom Lighted X's procured**



# Lighted X Runway Closure Marker



# Parallel Runway Closure Conspicuity - NTSB

***Research how to make a closed runway more conspicuous to pilots when one parallel runway remains in use, and implement a method to more effectively signal a runway closure to pilots during ground and flight ops at night.***

- Effectiveness of additional Lighted X on closed runway
  - Multiple locations/setups
- Lighted X varying flash rates
- Lighted X flashing patterns
- Different size or colors of Lighted X
- Other supplemental lighting on airport
- Difference in effectiveness of LED vs Incandescent lighting in Lighted X
- Cost estimate of proposed alternatives
- Develop metrics to determine comparisons relative to safety improvements

# FAA Research Taxiway

- **Single site to design, test, evaluate, monitor, and report on the performance of state-of-the-art airport safety and pavement technologies.**
- **Memorandum of Agreement (MOA) between FAA and Delaware River and Bay Authority (DRBA).**
  - November 15, 2010 through September 30, 2030.
- **Taxiway opened in April 2017**



# FAA Research Taxiway



# FAA Research Taxiway Lighting Vault



# Questions?

