



**Federal Aviation
Administration**

AIRPORT TECHNOLOGY R&D RESEARCH PROJECTS

IESALC 2021

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October 7, 2021



Evaluation of Solar Powered Lighting Systems on Airports

Research Request:

Conduct Research to Evaluate Solar Lighting Systems at Five GA Airports in Diverse Geographic Regions Based on Varied Solar Insolation, Ambient Temperature Range, and Snow Fall.

1. Geographic Regions Selected:

- *Cape May, NJ (Initial Prototype Installation)*
- Central Upstate New York
- Pacific Northwest (Washington State)
- Central/Southern Arizona
- Central Oklahoma

2. Site Survey:

Conduct surveys at candidate GA airports in each region to identify most suitable locations

3. Site Selection:

Select one GA airport from each region for evaluation



Timeframe:

Evaluations to be conducted over a sufficient period of time to allow for assessment of seasonal solar insolation and related battery charging capabilities.

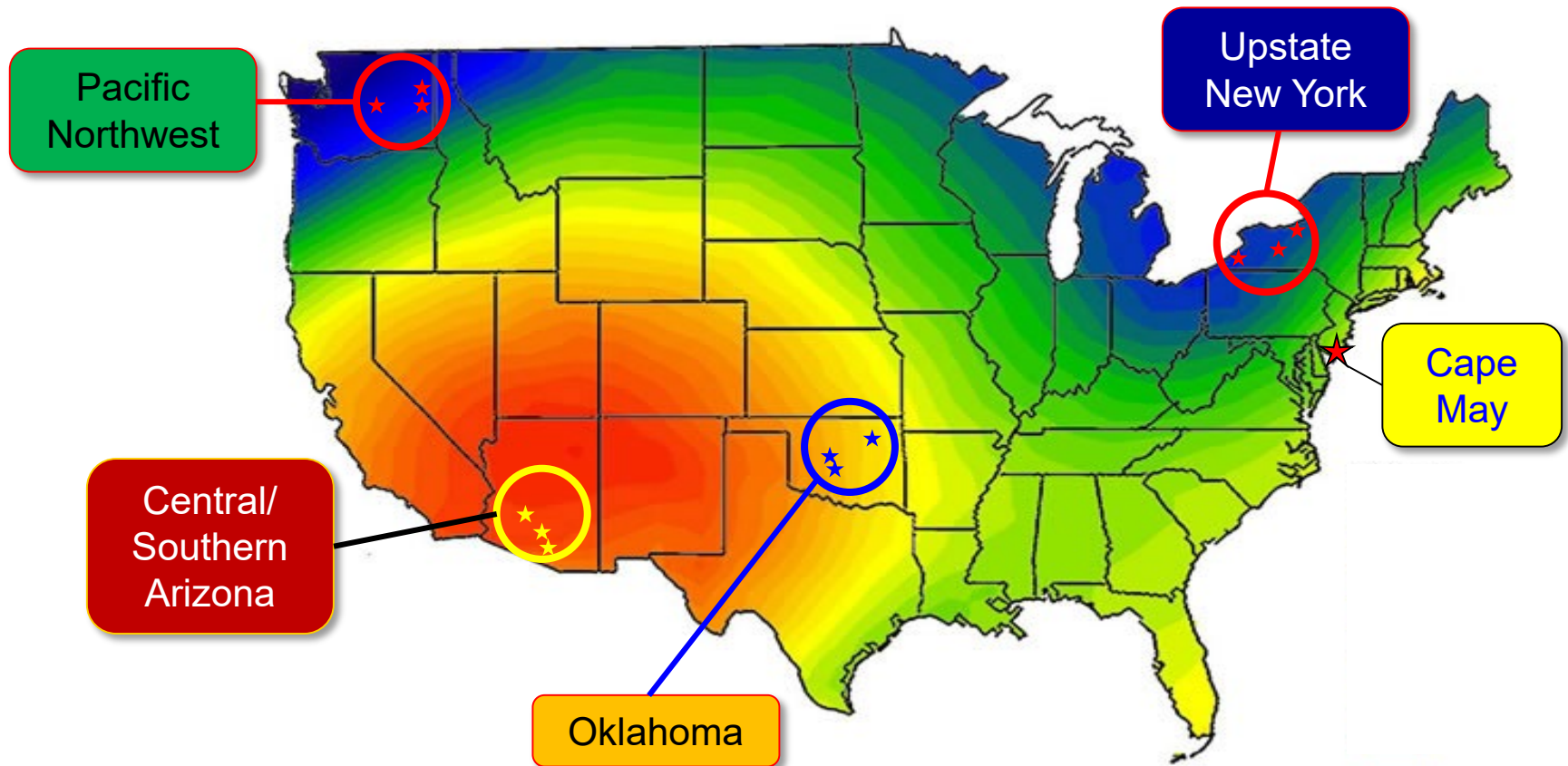


Components

- **Airfield Components (total of 46):**
 - L-861 Runway Edge/Threshold Lights
 - L-861T Taxiway Edge Lights
 - L-810 Obstruction Lights
 - Elevated Runway Guard Lights
 - Wind Cones
 - Airfield Guidance Signs
- **Each component is “decentralized” i.e. each component has its own solar panel and battery charging system**
- **Two manufacturers**
 - Carmanah and AvLite

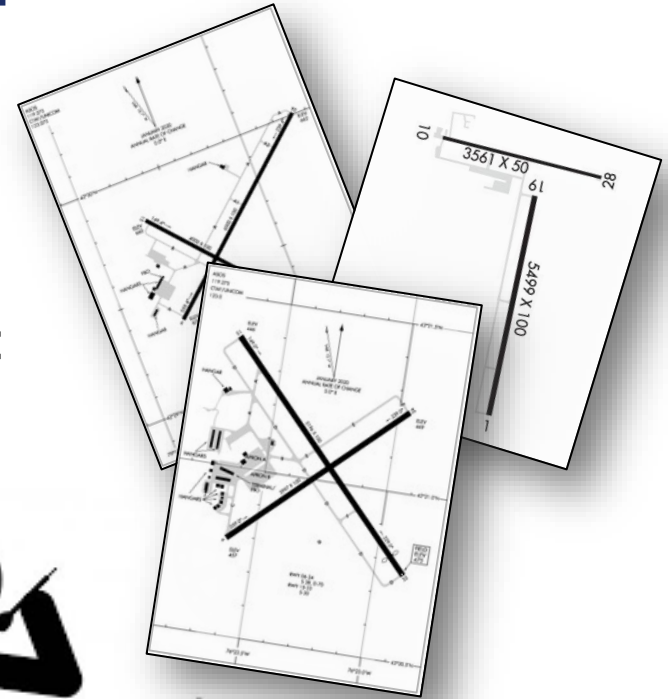


Proposed Test Site Locations



Candidate Airports

- **Central Upstate New York:**
 - Oswego County (FZY)
 - Dunkirk (DKK)
 - **Penn Yan (PEO)**
- **Pacific Northwest (Washington State):**
 - Felts Field (SFF),
 - Deer Park (DEW),
 - Ephrata Municipal (EPH)
- **Central Arizona:**
 - Phoenix Goodyear (GYR)
 - Casa Grande (CGZ)
 - Pinal Airpark (MZJ)
- **Central Oklahoma:**
 - U. of Oklahoma (OUN)
 - Wiley Post (PWA)
 - William Pogue (OWP)



Project Status

- Laboratory Testing at Intertek and RPI is **complete**
- Cape May “Prototype” Installation is **complete**
- Data Acquisition formally began on February 1, 2021
- Site Survey Report for candidate sites in Upstate NY delivered on December 31, 2020 **complete**
- Interim (~30% submittal) field test data report delivered on December 31, 2020 **complete**
- Final NY Site Visits **complete**
- Installation at NY airport (Penn Yan) **In Progress**
- Selection of next test sites **Commencing**
 - Arizona
 - Washington State



Cape May Installation



Solar Powered
Devices Located on an
Abandoned Section of
Former Runway 14-32.



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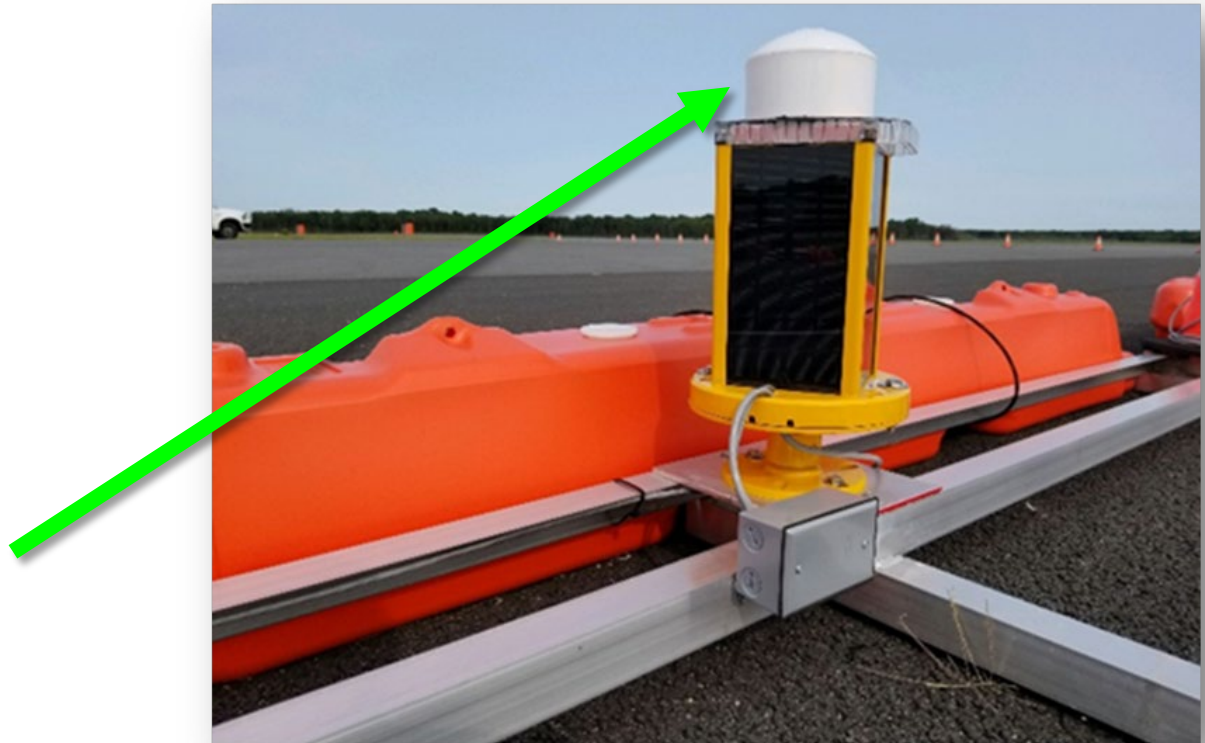
Solar Device Test Beds will Have a Combined Foot Print of Approximately 100 feet x 70 feet.



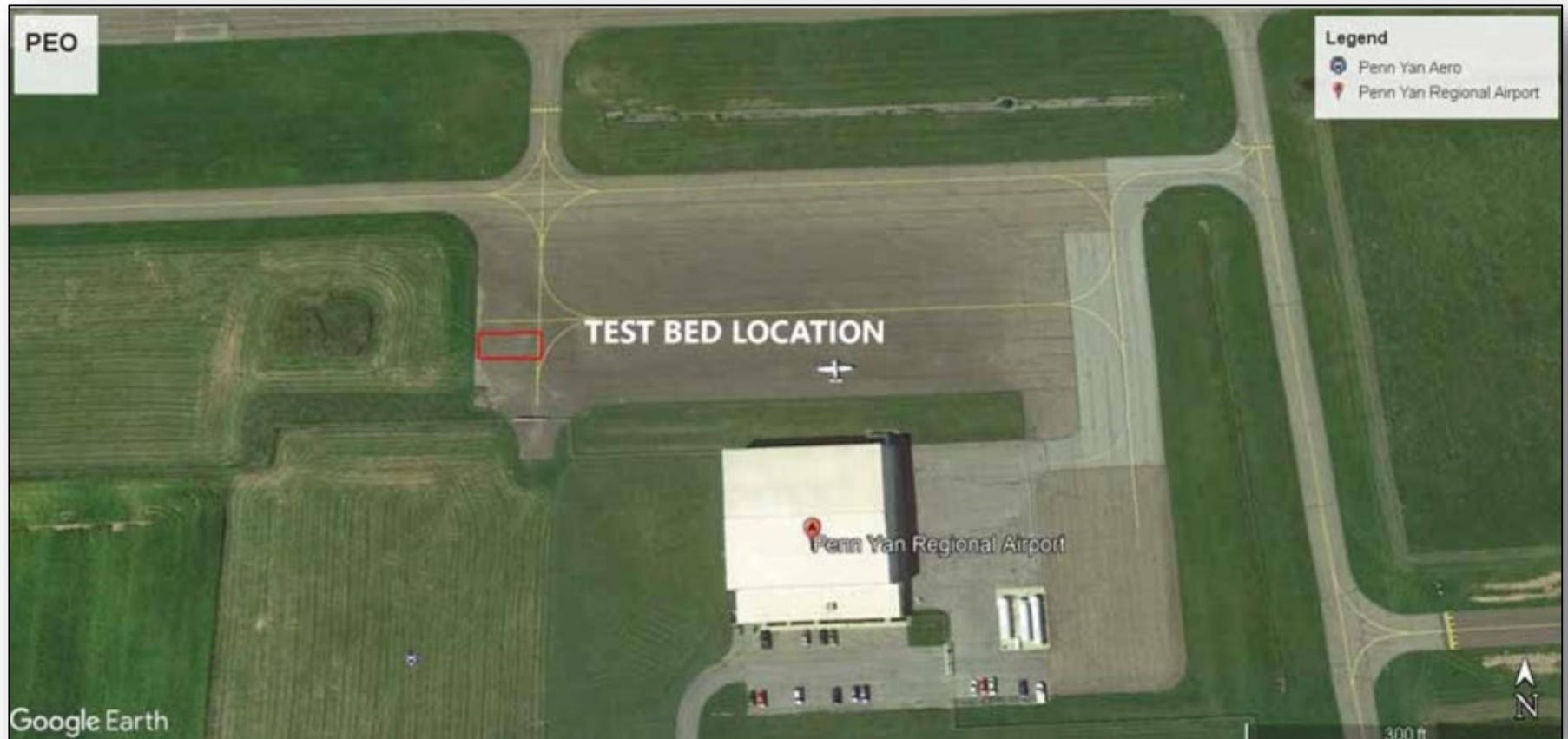
Portable Test Beds



Lights are baffled



PEO Test Bed Location



PEO Test Bed Construction



PEO Test Bed Construction



Other Visual Guidance Projects



Lighted X



Closed Runway Conspicuity

- Project stems from WSL incidents and one at SFO in particular
- Investigation of potential mitigations to make closed runways more conspicuous
- Focus is on the use of Runway Closure Markers (RCM) in various positions and quantities on the closed runway to improve pilot recognition and comprehension of the closed surface without distracting from flight deck duties during landings
- Project will commence following determinations/outcomes from Lighted X Intensity study
- Project Plan Complete
- Detailed Test Plan under revision



Baffling

- Continued support of ATO and Tech Ops to ensure that glide path indicators such as VASIs and PAPIs are providing precision light outputs
- Baffles are placed within the equipment to block portions of light signals that should not be seen by pilots
- Ad hoc support as required



EMAS Sign Placement



EMAS Signs Dimensions



Questions?

