Airport Sustainability

IND Solar Farm

Jarod Klaas, P.E.
Director, Engineering
Indianapolis Airport Authority
IAA Airport System
Facts

• Runway 5L/23R — 11,200’ x 150’
  Runway 5R/23L — 10,000’ x 150’
  Runway 14/32 — 7,280’ x 150’
• Category III instrument landing system (ILS) on runways 5L & 5R
• Category I ILS all other runways
• 135 daily flights to 32 nonstop destinations
• 3.7 million enplaned passengers (2012)
• 4.7 million tons of cargo (2012)
• Over 9,000 people employed at the airport
• $4.57 billion annual economic impact (2012)
IND Solar Farm - Phase 3
Initial Site Considerations

- Large tract non-aviation land area needed (60+)
- Fairly close proximity to substation to keep construction costs viable
- Reflectivity analysis
• **Limited legacy costs...**

  – Little to no maintenance costs (no or few moving parts)
  – Favorable Lease Terms – Significant Non-Airline Revenue Source
  – IAA held harmless for damages / liabilities
  – Lasting product
    * Production warranties up to 30 years
    * Original commercial panels produced by Bell Lab in 1954 are still functioning
Strong Long-Term Land Use Strategy for IAA
Viable Private Investment Strategy

- Lower cost components
  - Solar modules have dropped tremendously (from $2.60 down to $.80 per watt)
  - Cost of other system components are falling as well (racking; inverters; etc...)
Financing Hurdles

- Major investment of time to locate a financing firm/investors for a green project of this size
- Financing completed with an off-shore bank, due to IURC’s ability to terminate the Power Purchase Agreement’s 20 cents/kwh rate, being cited by US banks
- Established long-term relationship between eventual buyer (GES) and Cathay Bank was helpful
- $35-40M privately funded green projects are not common within the US
FAA Hurdles

• Archeological Impact – Conducted to ensure that no significant historical artifacts or dwellings exist on the proposed development site.

• Environmental/Wetlands Impact – Conducted to ensure there was no adverse impact to the natural habitat.

• FAA #7460 (Notice of Proposed Construction) – Approves the actual development and establish the maximum height of construction on the site for air spacing & any special development restrictions.

• Reflectivity Analysis – An extensive reflectivity analysis was conducted to assess the potential glare to the Air Traffic Control Tower and arriving aircraft - included the use of the Solar Glare Hazard Analysis Tool (SGHAT).
FAA Hurdles

- FAA Land Release – Required FAA approval for the development area to be released for non-aviation use.

- Land Lease Agreement for Airports - Requires Fair Market Value Assessment for Lease Agreements

- Tree Removal
  - Indiana Bat Habitat
  - Protected Wetlands

- Construction/Field Issues
  - FAA 7460 review and use of cranes
  - Laser restrictions for construction equipment
  - Drainage, erosion control and site restoration
Thank you!

Jarod Klaas, P.E.
Director, Engineering
Indianapolis Airport Authority
317-487-5147
jklaas@ind.com