3D Solar Glare Analysis & Impacts to Airport Operations
About Valley Metro

- Public transit agency for the Phoenix, AZ area
- Operates bus, light rail, and bus rapid transit (BRT) services
Operations & Maintenance Center (OMC)
Airport Connection

- Roughly 1 mile from the end of the runway
- Property owned by the Sky Harbor Airport and leased to Valley Metro
Valley Metro Sustainability
Solar Energy in Arizona

- Average 306 days sunny days per year
- Agua Caliente Solar Photovoltaic Facility
OMC Solar Project Background
3D Flythrough Video
Glare Analysis Background

- Air Traffic Control Tower at Boston Manchester Airport
- $3.5 solar array had to be covered by a tarp
- Closer FAA scrutiny and analysis for any future solar projects near airports
Sandia Labs SGHAT Model

- Calculates any possible solar glare between two points for an entire year
- One glaring problem- no site factors considered
3D GIS Analysis of Glare to the Air Traffic Control Tower (ATCT)

April 9th 6:11 AM Glare to the ATCT
Glare Calculation Setup
Glare Calculation Model
3D Flythrough Video- Glare
Site Factors

- AZ State Route 143 On Ramp
- Building Shadows
3D Flythrough Video- Shadows
Glare to the Pilots

- 3 Runways
  - 2 places for arrivals and departures for a total of 6 runways to be analyzed
- Arrivals and departures are at different heights
Departures

Flight path of departing flights from Runway 26

Glare from PV Array
Arrivals

Flight path of arriving flights to Runway 26

Glare from PV Array
Summary

• Glare to ATCT is eliminated with keeping some arrays at original orientation with building shadows

• Visualization of the angles the glare travels in relation to the aircraft eliminates many problems

• 3D GIS Visualization can paint a more complete picture of the potential glare from a solar project
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