Project Team Update

• Changes in Project Management Team Leads
• Armstrong remains the prime
• Kimley-Horn will lead to completion
  – Pam Keidel-Adams as Project Manager
  – Additional technical analyses
Agenda

• Project status update
• Aviation demand forecasts recap
• Facility requirements recap
• Development alternatives
• Interactive activity
• Next steps
Project Status Update

• Aviation demand forecasts submitted and APPROVED by FAA
  – Concurrence to maintain Boeing 767 as design aircraft
• Facility requirements identified based on approved forecast
• Preliminary development alternatives including airside and land use
Agenda

- Project status update
- Aviation demand forecasts recap
- Facility requirements recap
- Development alternatives
- Interactive activity
- Next steps
## Based Aircraft Forecast

<table>
<thead>
<tr>
<th>Year</th>
<th>Single-engine</th>
<th>Multi-engine</th>
<th>Jet</th>
<th>Helicopter</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>204</td>
<td>15</td>
<td>1</td>
<td>2</td>
<td>222</td>
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<tr>
<td>2021</td>
<td>220</td>
<td>17</td>
<td>2</td>
<td>3</td>
<td>243</td>
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<tr>
<td>2026</td>
<td>237</td>
<td>20</td>
<td>3</td>
<td>5</td>
<td>265</td>
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<tr>
<td>2031</td>
<td>255</td>
<td>22</td>
<td>5</td>
<td>7</td>
<td>290</td>
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<tr>
<td>2036</td>
<td>274</td>
<td>25</td>
<td>6</td>
<td>9</td>
<td>315</td>
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<tr>
<td>Annual Growth 2016-2036</td>
<td>1.48%</td>
<td>2.62%</td>
<td>9.63%</td>
<td>8.07%</td>
<td>1.76%</td>
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</table>
# Operations Forecast

<table>
<thead>
<tr>
<th>Year</th>
<th>Air Carrier</th>
<th>GA</th>
<th>Military</th>
<th>GA</th>
<th>Military</th>
<th>Total Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>108</td>
<td>45,941</td>
<td>3,072</td>
<td>73,090</td>
<td>1,183</td>
<td>123,394</td>
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<tr>
<td>2021</td>
<td>336</td>
<td>48,049</td>
<td>3,091</td>
<td>79,767</td>
<td>1,103</td>
<td>132,346</td>
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<tr>
<td>2026</td>
<td>350</td>
<td>50,363</td>
<td>3,091</td>
<td>85,122</td>
<td>1,103</td>
<td>140,030</td>
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<tr>
<td>2031</td>
<td>364</td>
<td>52,356</td>
<td>3,091</td>
<td>113,548</td>
<td>1,103</td>
<td>170,462</td>
</tr>
<tr>
<td>2036</td>
<td>379</td>
<td>53,759</td>
<td>3,091</td>
<td>142,028</td>
<td>1,103</td>
<td>200,360</td>
</tr>
</tbody>
</table>

Average Annual Growth 2016-2036

<table>
<thead>
<tr>
<th></th>
<th>Air Carrier</th>
<th>GA</th>
<th>Military</th>
<th>GA</th>
<th>Military</th>
<th>Total Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.47%</td>
<td>0.79%</td>
<td>0.03%</td>
<td>3.38%</td>
<td>-0.35%</td>
<td>2.45%</td>
<td></td>
</tr>
</tbody>
</table>
Agenda

• Project status update
• Aviation demand forecasts recap
• Facility requirements recap
• Development alternatives
• Interactive activity
• Next steps
Airfield Demand/Capacity

• Annual Service Volume = 275,590
• Ratio of 2035 ops to ASV:
  \[
  \frac{200,360}{275,590} = 72.7\%
  \]
• FAA recommends planning for additional capacity at 60% ratio and implementing additional capacity enhancements at 80%
## Aircraft Parking Apron Requirements

<table>
<thead>
<tr>
<th>Aircraft Parking Apron Requirements (SY)</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2016 (Existing)</td>
</tr>
<tr>
<td>Flight School Apron (tie-down apron)</td>
<td>75,000</td>
</tr>
<tr>
<td>Terminal/Lux Air Apron (terminal/itinerant apron)</td>
<td>27,700</td>
</tr>
<tr>
<td>AerSale Apron (other services apron)</td>
<td>95,300</td>
</tr>
<tr>
<td>Total Aircraft Parking Apron</td>
<td>198,000</td>
</tr>
</tbody>
</table>
Specific Aircraft Apron Needs

• MRO Requirements
  – Current tenants envision expansion in the near-term
    • Aircraft storage, apron, and hangar needs

• FBO Requirements
  – LuxAir envisions expansion in the near-term
    • Additional apron and hangars needed

• Flight schools requirements
  – Current tenants envision additional aircraft and students in near-term
    • Additional apron and dormitories needed
# Hangar/Structure Requirements

<table>
<thead>
<tr>
<th>Aircraft Storage Area Requirements</th>
<th>Year</th>
<th>2016 (Existing*)</th>
<th>2021</th>
<th>2026</th>
<th>2031</th>
<th>2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft Requiring Conventional Hangars</td>
<td></td>
<td>20</td>
<td>33</td>
<td>38</td>
<td>43</td>
<td>47</td>
</tr>
<tr>
<td>Aircraft Requiring T-Hangars and/or Shade Structures</td>
<td></td>
<td>208</td>
<td>138</td>
<td>149</td>
<td>161</td>
<td>173</td>
</tr>
<tr>
<td><strong>Total Aircraft Requiring Storage</strong></td>
<td></td>
<td><strong>228</strong></td>
<td><strong>171</strong></td>
<td><strong>187</strong></td>
<td><strong>204</strong></td>
<td><strong>220</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hangar Size Requirements (SF)</th>
<th>Year</th>
<th>2016 (Existing*)</th>
<th>2021</th>
<th>2026</th>
<th>2031</th>
<th>2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Hangars</td>
<td></td>
<td>36,000</td>
<td>42,600</td>
<td>49,600</td>
<td>57,000</td>
<td>62,800</td>
</tr>
<tr>
<td>T-Hangars and or Shade Structures</td>
<td></td>
<td>301,800</td>
<td>200,100</td>
<td>216,000</td>
<td>233,450</td>
<td>250,850</td>
</tr>
<tr>
<td><strong>Total Hangar Area</strong></td>
<td></td>
<td><strong>337,800</strong></td>
<td><strong>242,700</strong></td>
<td><strong>265,600</strong></td>
<td><strong>290,450</strong></td>
<td><strong>313,650</strong></td>
</tr>
</tbody>
</table>

*Note: Estimates based on size of existing facilities
Agenda

• Project status update
• Aviation demand forecasts recap
• Facility requirements recap
• Development alternatives
• Interactive activity
• Next steps
Development Alternatives

• Alternatives
  – Parallel Runway Alternatives
  – Development Alternatives
    • Aircraft Parking Apron (± 35 acres)
    • Aircraft Storage Hangars (± 27,000 sf)

• Land Use Alternatives
Alternatives Evaluation Criteria

• Satisfies Forecasted Demand
• Minimizes Environmental Impacts
• Facilitates Safety
• Enhances Revenue/Future Development
• Improves Airspace Efficiency
• Minimizes Impacts to Community
• Minimizes Impacts to Existing Facilities
Parallel Runway Alternatives

• 5,000’ x 75’ to accommodate existing and future GA fleet mix
• No-Build alternative does not satisfy projected demand
• East Side Alternative
  – Shown on previous ALP
  – Requires significant relocation of existing facilities
• Alternative 1: West Side – North Alternative
• Alternative 2: West Side – South Alternative
Runway Alternative – East Option

- Previous ALP – 4,300’ x 75’
- RPZ off-Airport property and/or significant impacts to existing T-Hangars and other facilities
  - 5,000’ runway would create greater impacts than shown
- Limits optimal locations for tenant expansion areas
Runway Alternative 1 – North
Runway Alternative 1 – North

• Benefits
  – Runway end close to flight schools
  – Preserves opportunity for development on SW corner
  – High ATCT visibility to runway ends

• Impacts
  – Eliminates development potential on NW portion of airfield closer to existing flight schools
  – Reduces usable area of NW Aircraft Storage area
  – May require relocation of drainage canal
  – Runway approach close to residential areas
  – No landside access to SW portion of airfield, environmental impacts to Bullard Wash
Runway Alternative 2 – South
Runway Alternative 2 – South

• Benefits
  – Preserves opportunity for development on NW portion of airfield with access point at Yuma Rd.
  – Avoids drainage canal
  – Runway approach from north shifted away from residential areas

• Impacts
  – Longer taxiing distance for flight school aircraft and other tenants
  – Reduces usable area of NW Aircraft Storage area
# Runway Alternatives - Comparison

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>ALTERNATIVE 1 - North</th>
<th>ALTERNATIVE 2 - South</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfies Forecasted Demand</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Minimizes Environmental Impacts</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Facilitates Safety</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Enhances Revenue/ Future Development</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Improves Airspace Efficiency</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Minimizes Impacts to Community</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Minimizes Impacts to Existing Facilities</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Evaluation Total</strong></td>
<td><strong>12</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

Legend: 3=Positive Impact, 2=No Impact, 1=Negative Impact
Development Alternatives

- Aircraft Parking Apron (~35 acres)
  - Flight Schools – 3 acres
  - FBO – 10.5 acres
  - MRO – 21 acres
- Aircraft Storage Hangars (~27,000 sf)
- Commercial Aircraft Parking Apron (~40 acres)
Development Alternative 1

• Benefits
  – Future MRO development can occur adjacent to existing apron and hangars
  – Proposed location of FBO apron provides taxiway access to existing FBO area but also caters to based aircraft
  – Location of relocated T-Hangars fosters separation between GA and larger itinerant / MRO activity
  – Provides relocated commercial aircraft storage related to MRO activity in closer proximity
  – Proposed development concentrated near existing facilities east of Runway 03-21
  – Terminal relocation provides additional flight school aircraft parking

• Impacts
  – Requires relocation of north T-Hangars
  – Requires relocation of terminal building and removal/relocation of buildings adjacent to terminal
Development Alternative 2
Development Alternative 2

• Benefits
  – Future MRO development can occur adjacent to existing apron and hangars
  – Proposed FBO apron provides taxiway access to existing FBO area but also caters to south hangar apron
  – Provides additional T-Hangar development near existing south hangar apron and retains north T-Hangars
  – Provides relocated commercial aircraft storage related to MRO activity in closer proximity
  – Terminal relocation provides additional flight school aircraft parking

• Impacts
  – Requires relocation of terminal building and removal/ relocation of buildings adjacent to terminal
  – Requires relocation/removal of airfield access roads
Development Alternative 3
Development Alternative 3

- **Benefits**
  - Single FBO/MRO apron compared with multiple reduces maintenance and construction costs
  - Future MRO development can occur adjacent to existing apron and hangars
  - Relocated T-Hangars can utilize access from Yuma Rd.
  - Provides relocated commercial aircraft storage related to MRO activity in closer proximity
- **Impacts**
  - Requires large commercial aircraft and itinerant aircraft to share access
  - Recent growth at FBO may exceed facility requirements. Location of proposed apron may siphon future FBO development needs.
  - Requires relocation of north T-Hangars that will be separated from existing facilities
  - Requires relocation of terminal building and removal/relocation of buildings adjacent to terminal
# Development Alternatives - Comparison

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>ALTERNATIVE 1</th>
<th>ALTERNATIVE 2</th>
<th>ALTERNATIVE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfies Forecasted Demand</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Minimizes Environmental Impacts</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Facilitates Safety</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Enhances Revenue/ Future Development</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Improves Airspace Efficiency</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Minimizes Impacts to Community</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Minimizes Impacts to Existing Facilities</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Evaluation Total</strong></td>
<td><strong>14</strong></td>
<td><strong>13</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

Legend: 3=Positive Impact, 2=No Impact, 1=Negative Impact
Alternatives Discussion

• Agree on 1?
• Additional thoughts?
• Now, land use alternatives
Land Use Alternatives

• Step 1 – Identify preferred parallel runway and development alternative

• Step 2 – Identify appropriate land uses for remainder of developable land
  – No requirements except must preserve some area for commercial aircraft storage apron
Land Use Alternatives Criteria

• Enhances Revenue/Future Development
• Maximizes compatibility with existing facilities
• Minimizes impacts to community
• Satisfies long-term development needs
• Provides optimal use of land and existing/future access points
# Land Use Categories

<table>
<thead>
<tr>
<th>LAND USE</th>
<th>PERMITTED USES</th>
<th>GENERAL REQUIREMENTS</th>
<th>REVENUE POTENTIAL</th>
<th>PRIORITY</th>
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</thead>
<tbody>
<tr>
<td>Educational/Vocational</td>
<td>Flight School, Flight Training, A&amp;P Mechanic Training, Satellite Campus</td>
<td>Apron Access, Hangars and Storage, Office/ Admin Space, Student Housing</td>
<td>$$</td>
<td>Medium</td>
</tr>
<tr>
<td>Industrial-Aviation</td>
<td>MRO, SASO, Aircraft Maintenance and Repair, Parts Storage, <strong>Commercial Aircraft Storage</strong>, Auto Parking</td>
<td>Apron Access (Heavy Apron), Large Hangars</td>
<td>$$</td>
<td>High</td>
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<tr>
<td>Corporate/FBO</td>
<td>FBO, Itinerant Aircraft Parking, Auto Parking</td>
<td>Parallel Taxiway Access, Apron Access, Corporate Hangar Space, Vehicle Storage, Building/Admin Areas</td>
<td>$</td>
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</tr>
<tr>
<td>Based Aircraft Accommodation</td>
<td>Apron, Taxilanes, T-Shades, Conventional Hangars, T-Hangars, Auto Parking</td>
<td>Aircraft Taxiing and Maneuvering, Apron, Small Hangars, Vehicle Parking</td>
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<tr>
<td>Aviation Support</td>
<td>General Equipment Storage, Maintenance Facilities, Terminal Building</td>
<td>Heavy Ramp, Taxiway Access</td>
<td>$</td>
<td>Medium</td>
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<tr>
<td>Aviation Business</td>
<td>Aviation-related business not associated with FBO or Repair/Maintenance. Retail, Office, Auto Parking</td>
<td>Hangar/ Office, Vehicle Parking</td>
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<td>Cargo/Freight</td>
<td>Cargo Buildings, Auto Parking</td>
<td>Taxilane Access, Road Access, Truck Maneuvering</td>
<td>$$</td>
<td>Medium</td>
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</tbody>
</table>
Agenda

- Project status update
- Aviation demand forecasts recap
- Facility requirements recap
- Development alternatives
- Interactive activity
- Next steps
Land Use Alternative 1 - Example
Land Use Alternative 2 - Example
Land Use Alternative – Detailed Terminal Area Example
Agenda

• Project status update
• Aviation demand forecasts recap
• Facility requirements recap
• Development alternatives
• Interactive activity
• Next steps
Next Steps

• Integrate input into revised alternatives
• TAC Meeting #4 – September 22
• PAC Meeting #3 – October 2
• Public Workshop – October 5
• Sustainability evaluation
• Airport Layout Plans
Phoenix Goodyear Airport