Dear Committee Members:

The forecast operations and previously stated goals and objectives relative to aviation development and economic enhancement were considered in the formulation of generalized airfield alternatives that are outlined/described in the text below. Following a detailed review of these alternatives by the Master Plan Update Study Committee, the purpose of which is to fulfill major facility requirements (basic runway and taxiway configuration), the selected airfield alternative and recommendations for landside development will be consolidated and presented in the Development Concepts and Alternatives Analysis chapter of the Master Plan Update.

Airfield Development Alternatives

Because all airport functions relate to and revolve around the basic runway layout, runway development alternatives must be examined and evaluated first. Specific considerations include runway operational capabilities (e.g., capacity and runway length), as well as runway orientation and approach protection criteria to support forecasted use through the planning period. This alternative analysis has been prepared to provide Airport Management and the Study Committee with a comprehensive outline of the key components of each alternative to assist with the identification of a preferred long-term CONCEPTUAL DEVELOPMENT PLAN for the Airport.

Please note that specific components/features are not necessarily exclusive to an individual alternative. Each alternative concept discussed below is a collection of features, many of which can be transferred from alternative to alternative.

Airside Alternative One – Retain Existing Runway Configuration with RSA Design Standard Compliance Modifications to Runway 18R/36L

This alternative maintains the Airport’s existing three runway configuration, including the proposed post-planning 3rd parallel runway, but provides three options for resolving the current non-standard runway safety area (RSA) criteria associated with each end of Runway 18R/36L. Runway 18L/36R would continue to serve
as the Airport’s primary runway, with Runway 8/26 serving as the secondary/crosswind facility. Two of the options for Runway 18R/36L (Option’s 1A & 1B) reflect a downgrade of the existing RDC from RDC D-III-4000 to RDC B-II-4000 and use of declared distances standards to resolve the RSA deficiencies. The third option for Runway 18R/36L (Option C) maintains the runway’s existing RDC D-III-4000 criteria, but requires the installation of an Engineered Material Arresting System (EMAS) at each runway end, in combination with declared distances to achieve RSA compliance. It should also be noted that the extension of Runway 18R/36L and/or proposed upgrade of the Runway 36L IAP to ¾-mile visibility minimums would trigger an FAA evaluation of the RPZ Interim guidance for land use due to the repositioning/enlargement of the Runway 36L RPZ that overlays the Gilcrease Expressway.

A listing of the various Alternative One airside improvement recommendations for each runway are presented in the following text.

Runway 18L/36R.
- Runway Design Code (RDC): Maintain @ RDC D-IV-1600
- Dimensions: Maintain Length & Width @ 10,000’ x 150’
- Instrument Approach Procedures (IAPs): Maintain Runway 18L & 36R IAPs
- Parallel Taxiway System: Maintain east & west side parallel taxiways (Taxiways “E” & “J”)
- Exit Taxiway System: Upgrade existing angled exit taxiways with 90° exit taxiways (Taxiways “E-1”, “J-1”, & “J-3”)
- Lighting & Navigational Aids: Maintain HIRLs, centerline lights, PAPIs, MALSR, ALSF2, glide slope antennas, and localizer antennas
- OANG F-16 Arresting Gear: Maintain @ each runway end
- Property/RPZ Easement Acquisition: Future Runway 18L RPZ easement/use agreement @ 17.2 acres
- Infrastructure Improvements/Modifications: Exit taxiway improvements

Runway 8/26.
- Runway Design Code (RDC): Maintain @ RDC D-IV-4000
- Dimensions: Maintain Length & Width @ 7,376’ x 150’
- Instrument Approach Procedures (IAPs): Maintain Runway 8 & 26 IAPs
- Parallel Taxiway System: Maintain south side parallel taxiway (Taxiway “C”) and north side partial parallel taxiway (Taxiway “B”)
- Exit Taxiway System: Upgrade angled exit taxiways with 90° exit taxiways (Taxiway “K”) to resolve intersection Hot Spot
- Lighting & Navigational Aids: Maintain HIRLs, PAPIs, REILs, & MALSR
- OANG F-16 Arresting Gear: Maintain @ each runway end
- Property/RPZ Easement Acquisition: Future Runway 8 RPZ property @ 4.6 acres
- Infrastructure Improvements/Modifications: Exit and parallel taxiway improvements
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Runway 18R/36L (Option 1A).
- Runway Design Code (RDC): Re-designate existing RDC D-III-4000 to RDC B-II-4000
- Dimensions: Displace Runway 18R Landing threshold 300’ to accommodate RSA requirements, implement declared distances, and reduce width to 75’
  - Runway 18R: TORA, TODA, & ASDA @ 6,101/LDA @ 5,801
  - Runway 36L: TORA & TODA @ 6,101/ASDA & LDA @ 5,801
- Instrument Approach Procedures (IAPs): Maintain Runway 18R & 36L IAPs (Existing GS antenna can be maintained with reduction in TCH: 60’ to 45’)
- Parallel Taxiway System: Maintain east & west side parallel taxiways (Taxiways “L” & “M”)
- Exit Taxiway System: Upgrade angled exit taxiways with 90” exit taxiways (Taxiways “K”, “L-2”, & “L-3”)
- Lighting & Navigational Aids: Reposition/reconfigure Runway 18R threshold lights, REILs, and HIRLs/Maintain PAPIs, glide slope antenna, and localizer antenna
- Property/RPZ Easement Acquisition: Future Runway 18R RPZ easement/use agreement @ 34.1 acres
- Infrastructure Improvements/Modifications: Runway and taxiway width reductions

Runway 18R/36L (Option 1B).
- Runway Design Code (RDC): Re-designate existing RDC D-III-4000 to RDC B-II-4000
- Dimensions: Relocate Runway 18R landing threshold 210’, then displace Runway 18R landing threshold 390’ to accommodate RSA undershoot requirements.
  - Runway 18R: TORA, TODA, & ASDA @ 6,338/LDA @ 6,038
  - Runway 36L: TORA & TODA @ 6,338/ASDA & LDA @ 6,038
- Instrument Approach Procedures (IAPs): Maintain Runway 18R (Existing GS antenna can be maintained with reduction in TCH: 60’ to 45’)/Revise existing Runway 36L IAP, but maintain existing visibility minima
- Parallel Taxiway System: Extend east side parallel taxiway (Taxiway “L”) 237’ south/Maintain west side parallel taxiway (Taxiway “M”)
- Exit Taxiway System: Upgrade angled exit taxiways with 90” exit taxiways (Taxiways “K”, “L-2”, & “L-3”)
- Lighting & Navigational Aids: Reposition/reconfigure Runway 18R & 36L threshold lights, REILs, and HIRLs/Maintain PAPIs, glide slope antenna, and localizer antenna
- Property/RPZ Easement Acquisition: Runway 18R RPZ easement/use agreement @ 34.1 acres
- Infrastructure Improvements/Modifications: Runway and taxiway extension with width reductions

Runway 18R/36L (Option 1C).
- Runway Design Code (RDC): Re-designate existing RDC D-III-4000 to RDC D-II-4000
- Dimensions: Relocate Runway 18R landing threshold 210’, then displace Runway 18R landing threshold 390’ to accommodate RSA undershoot requirements.
- Extend runway 237’ south, then displace Runway 36L landing threshold 200’, implement declared distances, and reduce width to 100’
  - Declared Distances: RW 18R - TORA, TODA, & ASDA @ 6,288/LDA @ 5,738
  - Declared Distances: RW 36L - TORA, TODA, & ASDA @ 6,128/LDA @ 5,928
- Instrument Approach Procedures (IAPs): Maintain Runway 18R IAP & upgrade 36L IAP visibility minima to ¾-miles
AIRSIDE ALTERNATIVE 1C DETAIL (RUNWAY 18R/36L)

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Figure D4

DEPARTURE RPZ
500' X 1010' X 1700'

APPROACH RPZ
1000' X 1510' X 1700'

EMAS 175' L X 162' W

RELOCATE THRESHOLD 210'

390'
DISPLACED THRESHOLD

6128'
RW18R
ASDA

5738'
RW18R
LDA

5928'
RW36L
LDA

6128'
RW36L
ASDA

AVIGATION EASEMENT
(33.3 ACRES)

200'
DISPLACED THRESHOLD

237° RUNWAY EXTENSION

EMAS 365' L X 162' W

SOURCE: 2015 AGIS Survey by Woolpert
Parallel Taxiway System: Modify east & west side parallel taxiways (Taxiways “L” & “M”) in conjunction with runway threshold relocations/displacements

Exit Taxiway System: Upgrade angled exit taxiways with 90° exit taxiways (Taxiways “K”, “L-2”, & “L-3”) and relocate runway end connector taxiways in conjunction with runway threshold relocations/displacements

Lighting & Navigational Aids: Reposition/Relocate HIRLs, PAPIs, REILs, and glide slope antenna, but maintain localizer antenna

Property/RPZ Easement Acquisition: Future Runway 18R RPZ easement/use agreement @ 33.3 acres

Infrastructure Improvements/Modifications: Runway and taxiway extension

**Future 3rd Parallel Runway (Runway 18L/36R).** Retain for planning purposes as shown on existing ALP.

- Runway Design Code (RDC): RDC D-IV-1600
- Dimensions: Length & Width @ 9,000’ x 150’/12,000’ x 150’ (Post-Planning)
- Instrument Approach Procedures (IAPs): Runway 18L & 36R IAPs
- Parallel Taxiway System: West side parallel taxiway
- Exit Taxiway System: Angled and 90° exit taxiways
- Lighting & Navigational Aids: HIRLs, centerline lights, PAPIs, MALSR, and ALSF2
- Property/RPZ Easement Acquisition: Future Runway 18L RPZ property @ 11.6 acres
- Infrastructure Improvements/Modifications: Runway and taxiway construction, roadway bridging (N. Mingo Road and E. 36th St. N.), Mingo Creek modifications (channelization, floodplain, and wetland mitigation improvements), utility relocations, etc.

**Airside Alternative One Summary.**

- Preserves Airport’s existing three runway configuration
  - Runway 18L/36R (Primary/Air Carrier)
  - Runway 8/26 (Secondary/Air Carrier & Crosswind)
  - Runway 18R/36L (Secondary/General Aviation)
- Retains development option for post-planning 3rd parallel runway (Secondary/Air Carrier)
- Provides three development options for resolving the Runway 18R/36L non-standard RSA criteria
- Includes a variety of taxiway improvement projects to improve airfield geometry
- Includes property/RPZ Easement Acquisition (67.5 Acres)

**Airside Alternative Two – Modify Existing Runway Configuration with Extensions of Runway 18R/36L & Runway 8/26 and RSA Design Standard Compliance Modifications to Runway 18R/36L**

As with Alternative One, this alternative maintains the Airport’s existing three runway configuration, including the proposed post-planning 3rd parallel runway, but offers runway extension options to Runways 8/26 and 18R/36L to better serve the existing aircraft fleet, and would also resolve the current non-standard RSA criteria associated with each end of Runway 18R/36L. Runway 18L/36R would continue to serve as the Airport’s primary runway, with Runway 8/26 being lengthened by 400 feet to better serve as the secondary/crosswind facility. In addition to upgrading the runway’s existing RDC D-III-4000 criteria to RDC D-
III-2500, Runway 18R/36L would be extended 999 feet to the south (requires bridging over the Gilcrease Expressway), including a threshold displacement on the north and the implementation of declared distances standards to resolve the RSA deficiencies. The resulting operational runway lengths, ranging from 6,100 to 7,100 feet, would better accommodate the larger general aviation aircraft fleet (i.e., the business jets) that utilize the west parallel runway. It should also be noted that the extension of Runway 18R/36L and proposed upgrade of the Runway 36L IAP to ¾-mile visibility minimums would trigger an FAA evaluation of the RPZ Interim guidance for land use due to the repositioning and enlargement of the Runway 36L RPZ over land that is not currently controlled by the TAIT. Evaluation of the RPZ Interim guidance would also be triggered by the extension of Runway 8/26, due to the repositioning of the Runway 26 RPZ over Mingo Road. In addition, a portion of the uncontrolled property within the future Runway 36L RPZ includes an existing property on the National Register of Historic Places (NRHP), the J. Paul Getty Bunker House, which could require a formal Section 4f consultation of the alternative.

A listing of the various Alternative One airside improvement recommendations for each runway are presented in the following text.

Runway 18L/36R.
- Improvement recommendations (same as those presented for Alternative One)

Runway 8/26.
- Runway Design Code (RDC): Maintain @ RDC D-IV-4000
- Dimensions: Extend length 400’ to east (7,776’) & maintain width @ 150’
- Instrument Approach Procedures (IAPs): Maintain Runway 8 IAPs & update Runway 26 IAPs
- Parallel Taxiway System: Extend south and north side parallel taxiways (Taxiways “C” & “B”) 400’ to east and extend Taxiway “B” to connect with Taxiway “L”
- Exit Taxiway System: Upgrade angled exit taxiways with 90” exit taxiways (Taxiway “K”) to resolve intersection Hot Spot
- Lighting & Navigational Aids: Maintain/Reposition HIRLs, PAPIs, REILs, & MALSR
- OANG F-16 Arresting Gear: Maintain @ each runway end
- Property/RPZ Easement Acquisition: Future Runway 8 RPZ property @ 4.6 acres
- Infrastructure Improvements/Modifications: Runway and parallel taxiway extension with exit taxiway improvements

Runway 18R/36L.
- Runway Design Code (RDC): Re-designate existing RDC D-III-4000 to RDC D-II-2500 criteria
- Dimensions: Extend length 999’ to south (7,100’), displace Runway 18R threshold 550’, implement declared distances, & reduce width to 100’
  - Declared Distances: RW 18R - TORA, TODA, ASDA @ 7,100’/LDA @ 6,550’
  - Declared Distances: RW 36L - TORA, TODA @ 7,100’/ASDA, LDA @ 6,150’
- Construct Airfield/RSA bridge over Gilcrease Expressway
- Instrument Approach Procedures (IAPs): Update Runway 18R IAP & upgrade Runway 36L IAP (3/4 mile visibility)
Parallel Taxiway System: Maintain west side parallel taxiway (Taxiways “M”)/Extend east side parallel taxiway (Taxiway “L”) south to serve extended runway

Exit Taxiway System: Upgrade angled exit taxiways with 90° exit taxiways (Taxiways “K”, “L-2”, & “L-3”)

Lighting & Navigational Aids: Maintain/Reposition HIRLs, PAPIs, REILs, glide slope antenna, and localizer antenna

Property/RPZ Easement Acquisition: Runway 18R RPZ easement/use agreement @ 27.2 acres, Runway 36L RPZ property @ 21.6 acres

Infrastructure Improvements/Modifications: Runway and taxiway extension, exit taxiway improvements, bridging of Gilcrease Expressway, roadway closure (portion of E. Young St. & N. 69th E. Ave.), utility relocations, etc.

Future 3rd Parallel Runway (Runway 18L/36R).

- Retain for long-term planning purposes as shown on existing ALP, but reduce recommended length to 8,500 feet to better match the current air carrier runway length requirements that were identified in the previous chapter of this Master Plan Update.
- Property/RPZ Easement Acquisition: Runway 18L RPZ property @ 6.9 acres
- Infrastructure Improvements/Modifications: Runway and taxiway construction, roadway bridging (N. Mingo Road and E. 36th St. N.), Mingo Creek modifications (channelization, floodplain, and wetland mitigation improvements), utility relocations, etc.

Airside Alternative Two Summary.

- Preserves Airport’s existing three runway configuration:
  - Runway 18L/36R (Primary/Air Carrier)
  - Runway 8/26 (Secondary/Air Carrier & Crosswind)
  - Runway 18R/36L (Secondary/General Aviation)
- Retains development option for post-planning 3rd parallel runway (Secondary/Air Carrier)
- Provides development option for resolving the Runway 18R/36L non-standard RSA criteria with enhanced GA and limited commercial service operational capabilities
- Includes a variety of taxiway improvement projects to improve airfield geometry
- Includes property/RPZ Easement Acquisition (72.9 Acres)
Airside Alternative Three – Modify Existing Runway Configuration with Extension of Runway 18R/36L & Closure of Runway 8/26

Alternative Three differs from the previous two alternatives by altering the Airport’s existing three runway configuration, with the decommissioning of Runway 8/26 and the extension/upgrade of Runway 18R/36L to serve as the secondary air carrier runway. This alternative also removes the proposed post-planning period 3rd parallel runway from the existing Airport Layout Plan. Runway 18R/36L would maintain the runway’s existing RDC D-III-4000 criteria and include a 2,199-foot extension to the south (requires bridging over the Gilcrease Expressway), including a threshold displacement on the north and the implementation of declared distances standards to resolve the existing RSA deficiencies. The resulting operational runway lengths, ranging from 7,300 to 8,300 feet, would provide the Airport with a secondary parallel runway that could accommodate both large business jets and air carrier aircraft on an as-needed basis. In addition, the closure of Runway 8/26 would make available additional existing airport property for aviation development, as well as reduce the long-term airfield construction and maintenance costs. However, as identified with Alternative Two, the future extension of Runway 18R/36L and proposed upgrade of the Runway 36L IAP to ¾-mile visibility minimums would trigger an FAA evaluation of the RPZ Interim guidance for land use due to the repositioning and enlargement of the Runway 36L RPZ over land that is not currently controlled by the TAIT. In addition, the Alternative Three runway extension would require relocation of an existing property on the National Register of Historic Places (NRHP), the J. Paul Getty Bunker House, and necessitate a formal Section 4f consultation of the alternative.

A listing of the various Alternative Three airside improvement recommendations for each runway are presented in the following text.

Runway 18L/36R.
- Runway Design Code (RDC): Maintain @ RDC D-IV-1600
- Dimensions: Maintain Length & Width @ 10,000’ x 150’
- Instrument Approach Procedures (IAPs): Maintain Runway 18L & 36R IAPs
- Parallel Taxiway System: Maintain Taxiway “E”/Realign southern segment of Taxiway “J” to 500’ RW/TW CL separation
- Exit Taxiway System: Upgrade existing angled exit taxiways with 90° exit taxiways (Taxiways “E-1”, “J-1”, & “J-3”)
- Lighting & Navigational Aids: Maintain HIRLs, centerline lights, PAPIs, MALSR, ALSF2, glide slope antennas, and localizer antennas
- OANG F-16 Arresting Gear: Maintain @ each runway end
- Property/RPZ Easement Acquisition: Future Runway 18L RPZ easement/use agreement @ 17.2 acres
- Infrastructure Improvements/Modifications: Parallel and exit taxiway reconstruction

Runway 8/26.
- Runway Design Code (RDC): Decommission runway and convert to taxiway
- Dimensions: Reduce width to 75’
- Instrument Approach Procedures (IAPs): Decommission IAPs
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- Parallel Taxiway System: Maintain south side parallel taxiway (Taxiway “C”) between Taxiways “E” & “L”, convert Runway 8/26 to a taxiway, and decommission Taxiway “B”
- Exit Taxiway System: No improvements required following runway decommissioning
- Lighting & Navigational Aids: Decommission HIRLs, PAPIs, REILs, & MALSR
- OANG F-16 Arresting Gear: Decommission/Relocate to Runway 18R/36L
- Property/RPZ Easement Acquisition: None
- Infrastructure Improvements/Modifications: Runway conversion to taxiway

Runway 18R/36L.
- Runway Design Code (RDC): Maintain existing RDC D-III-4000 criteria
- Dimensions: Extend length 2,199’ to south (8,300’), displace Runway 18R threshold 550’, implement declared distances, & maintain width @ 150’
  - Declared Distances: RW 18R - TORA, TODA, ASDA @ 8,300’/LDA @ 7,750’ (to provide 600’ RSA undershoot)
  - Declared Distances: RW 36L - TORA & TODA @ 8,300’/ASDA & LDA @ 7,300’
- Construct runway/taxiway bridge over Gilcrease Expressway
- Instrument Approach Procedures (IAPs): Update Runway 18R IAP & upgrade Runway 36L IAP (3/4 mile vis.)
- Parallel Taxiway System: Extend east and west side parallel taxiways (Taxiways “L” & “M”) south to serve extended runway
- Exit Taxiway System: Upgrade angled exit taxiways with 90° exit taxiways (Taxiways “K”, “L-2”, & “L-3”)
- Lighting & Navigational Aids: Maintain/Reposition HIRLs, PAPIs, REILs, glide slope antenna, and localizer antenna
- OANG F-16 Arresting Gear: Install @ each end of Runway 18R/36L (relocate from Runway 8/26)
- Property/RPZ Easement Acquisition: Runway 18R RPZ easement/use agreement @ 27.2 acres, Runway 36L RPZ property @ 59.3 acres
- Infrastructure Improvements/Modifications: Runway and taxiway extension, exit taxiway improvements, bridging of Gilcrease Expressway, roadway closure (portion of E. Young St. & N. 69th E. Ave.), utility relocations, etc.

Future 3rd Parallel Runway (Runway 18L/36R).
- Remove from ALP for long-term planning purposes

Airside Alternative Three Summary.
- Modifies Airport’s existing three runway configuration:
  - Runway 18L/36R (Primary/Air Carrier)
  - Runway 8/26 (Decommissioned)
  - Runway 18R/36L (Secondary/Air Carrier & General Aviation)
- Removes development option for post-planning 3rd parallel runway
- Provides development option for resolving the Runway 18R/36L non-standard RSA criteria with enhanced commercial service operational capabilities
- Includes a variety of taxiway improvement projects to improve airfield geometry
- Includes property/RPZ Easement Acquisition (103.7 Acres)