

Nashville International Airport



Master Plan Update Technical Advisory Committee Meeting

February 14, 2019



Metropolitan Nashville Airport Authority™

AECOM

Agenda

- Welcome and Introductions
- Aviation Activity Forecast
- Facility Requirements
- Alternatives Analysis
- Project Schedule
- Next Steps



Aviation Activity Forecast



Forecast Summary

2017 Baseline vs 2037 Projected



206,000 → **311,000**

**Annual Aircraft
Operations**



7.1M → **11.9M**

**Annual Passenger
Enplanements**



87 → **164**

Based Aircraft

2037 - Projected

88

Peak hour Operations

4,114

Peak Hour
Enplanements

4,473

Peak Hour
Deplanements

53

Single-/Multi-
Engine

109

Jet

2

Helicopter



Airfield Facility Requirements



Airfield Capacity Summary: Sufficient for Projected Operations

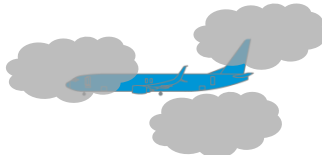
Hourly Capacity

146 Operations



Under VMC Conditions (>90% of the year)

107 Operations



Under IMC Conditions (<10% of the year)

Peak Hour Demand

58 Operations

2017

88 Operations

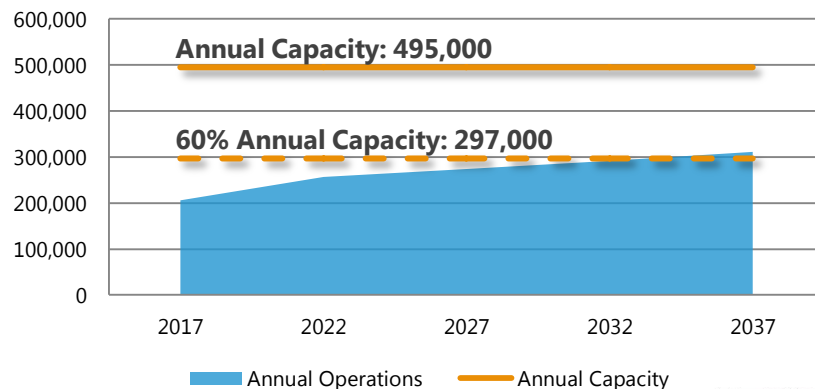
2037 - Projected

Annual Capacity – Current Airfield

495,000 Operations

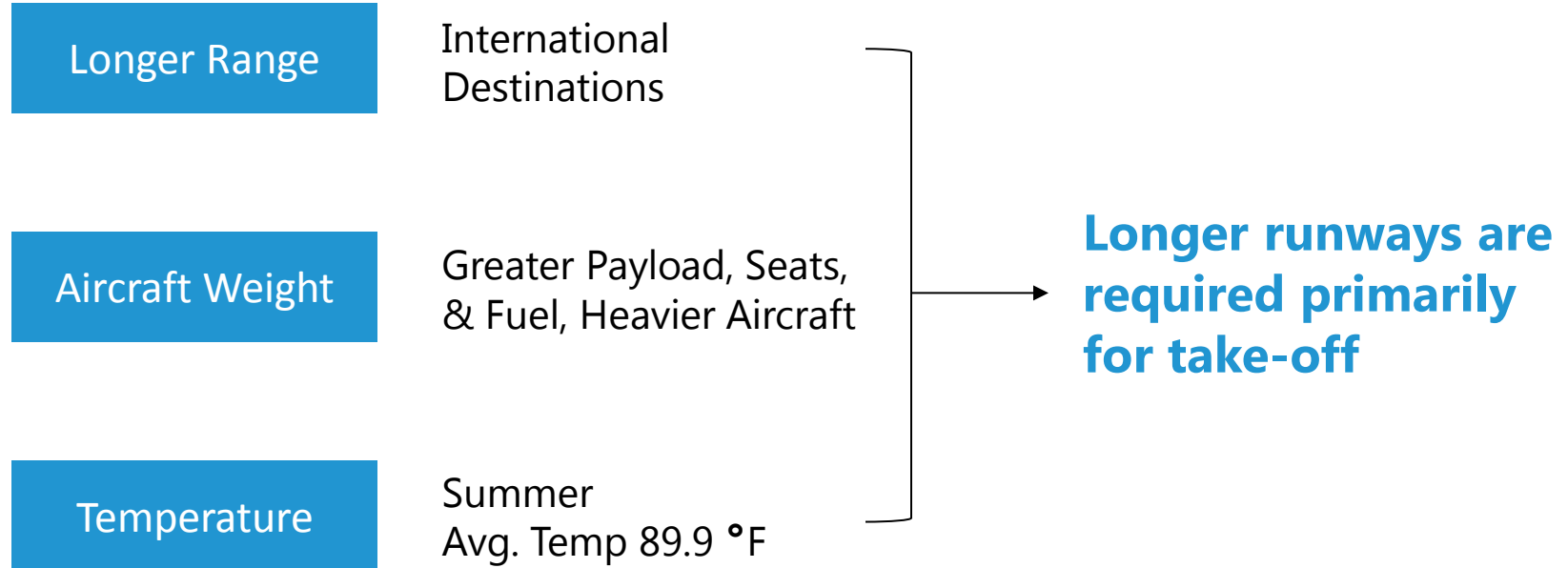
Annual Demand – 2037 Projected

311,000 Operations



Runway Length & Determining Factors

Required takeoff length is affected by three main factors:



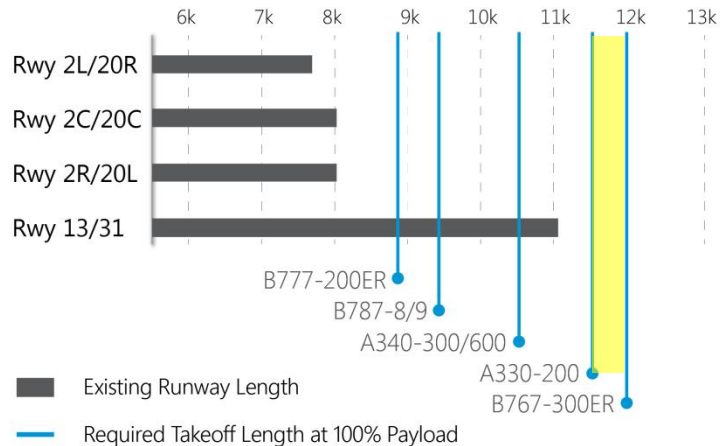
Connecting Nashville to the World



Representative Airlines



Runway Lengths



Takeoff Length
Analysis Basis

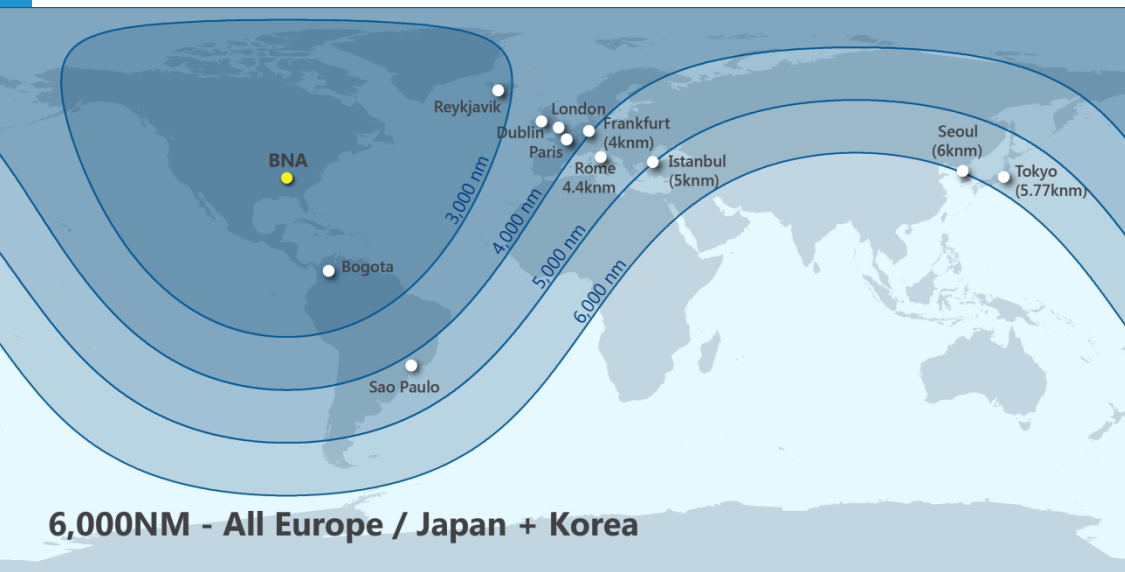
Typical hot day at BNA (approx. 89.9 °F degrees)
 Airport elevation at 599' MSL
 Runway gradient accounted for



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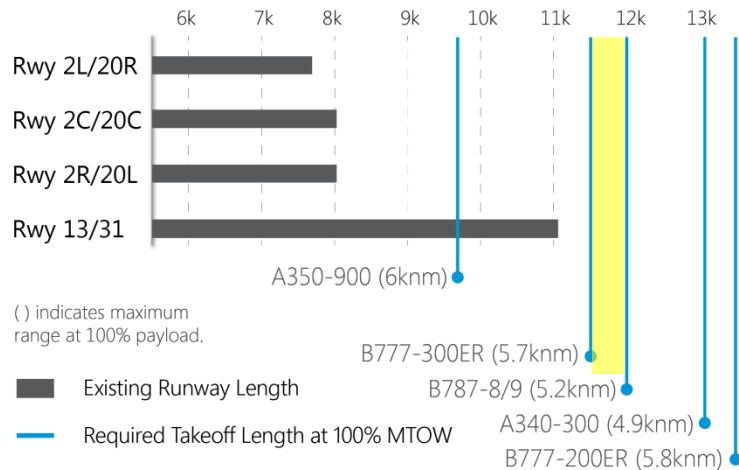
Connecting Nashville to the World



Representative Airlines



Runway Lengths



Takeoff Length Analysis Basis

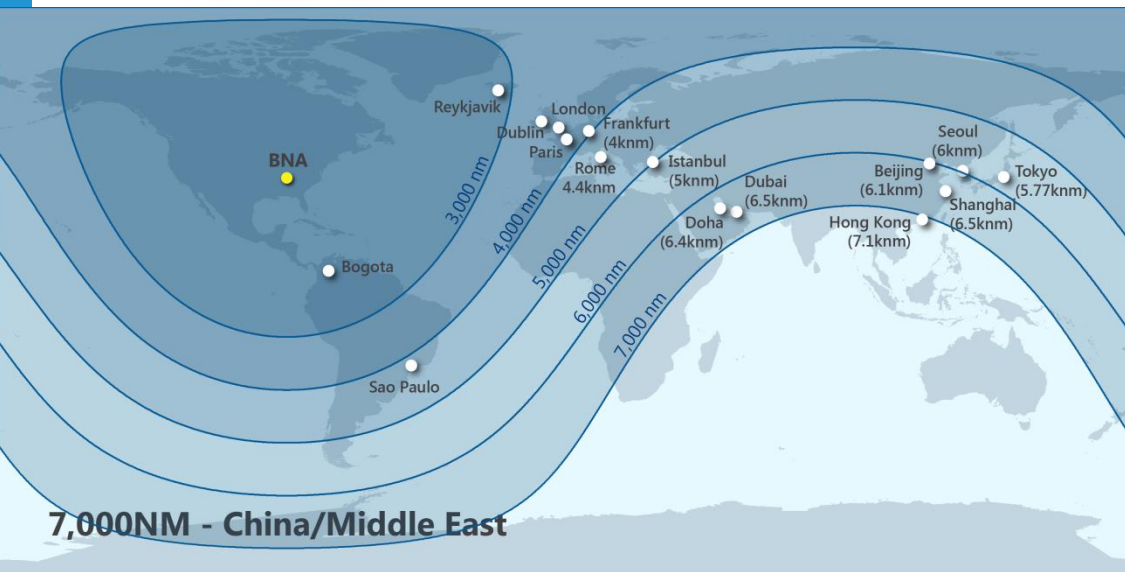
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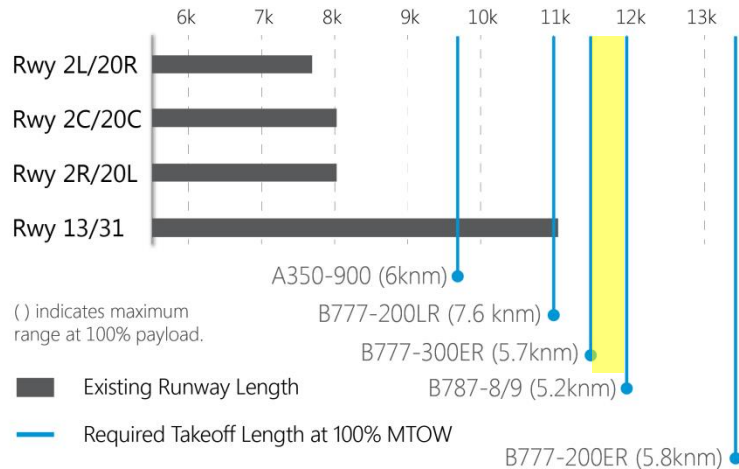
Connecting Nashville to the World



Representative Airlines



Runway Lengths



Takeoff Length Analysis Basis

Typical hot day at BNA (approx. 89.9 °F degrees)
 Airport elevation at 599' MSL
 Runway gradient accounted for



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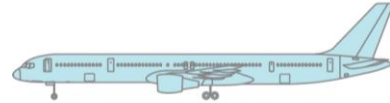
Runway Length Analysis - Summary

- Air Service to All Europe/Tokyo & Seoul/China & Middle East
- Foreign Flag Carriers and Representative Airline Fleets
- International Flights – runway length needed for 100% payload
- Hot Day/Airport Elevation/Runway Slope
- Result: **Plan for 12,000-foot runway length**



“Critical Aircraft” Identification

- “Critical Aircraft” – an aircraft used as basis for design of airfield and terminal facilities to FAA standards
- Requires more than 500 takeoffs and landings per year by the aircraft to qualify
- Current critical aircraft is B757 (Design Group IV)
- Upgrade critical aircraft to B787 (Design Group V)
 - Larger aircraft → greater runway & taxiway separations and clearance areas, greater taxiway turning radii and pavement widths, larger terminal gate parking positions, etc.



B757-300



B787-8/9



Terminal Facility Requirements



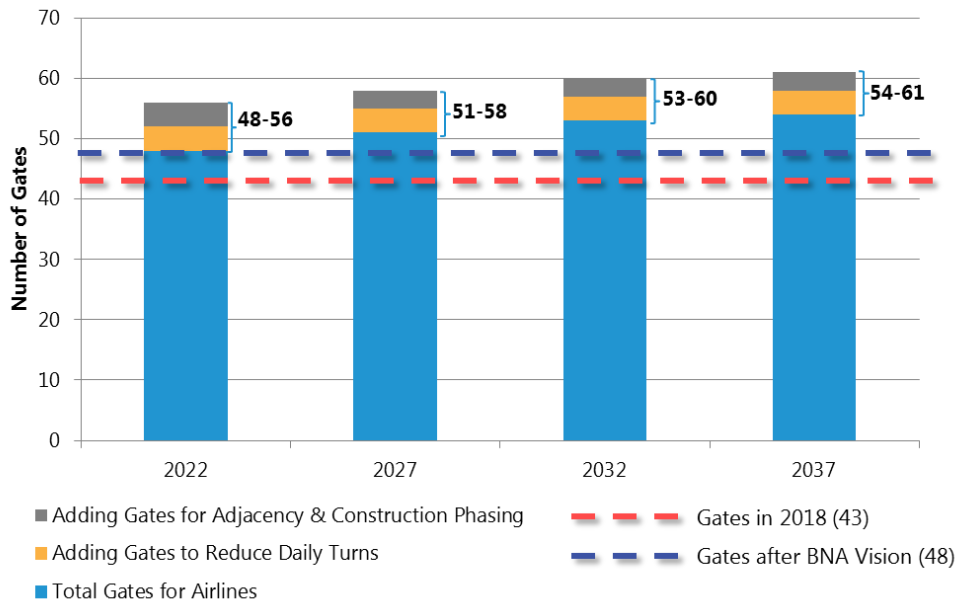
Gate Requirements

	Master Plan ¹	
Year	Activity Level	Gates Required
2022	18 MAP	48 – 56
2026	-	-
2027	20 MAP	51 – 58
2032	22 MAP	53 – 60
2037	24 MAP	54 – 61

MAP: Millions of Annual Passengers

Notes:

- The Master Plan gate requirements were evaluated with a range:
 - Low range of gate count would require higher gate utilization and limited flexibility during construction to relocate airlines
 - High range of gate count provides gate utilization similar to existing and flexibility during construction to relocate airlines

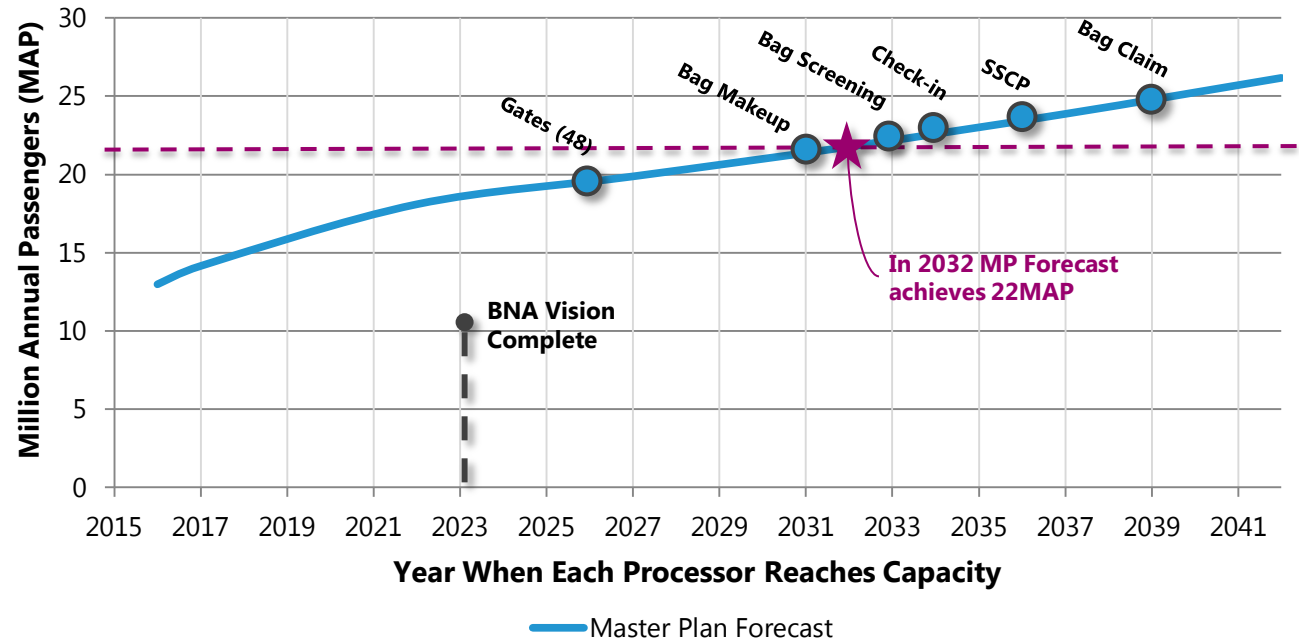


Terminal Processor Capacity

Key Takeaway:

- After activity levels reach 22 MAP, the key processors will gradually reach capacity and need to be addressed

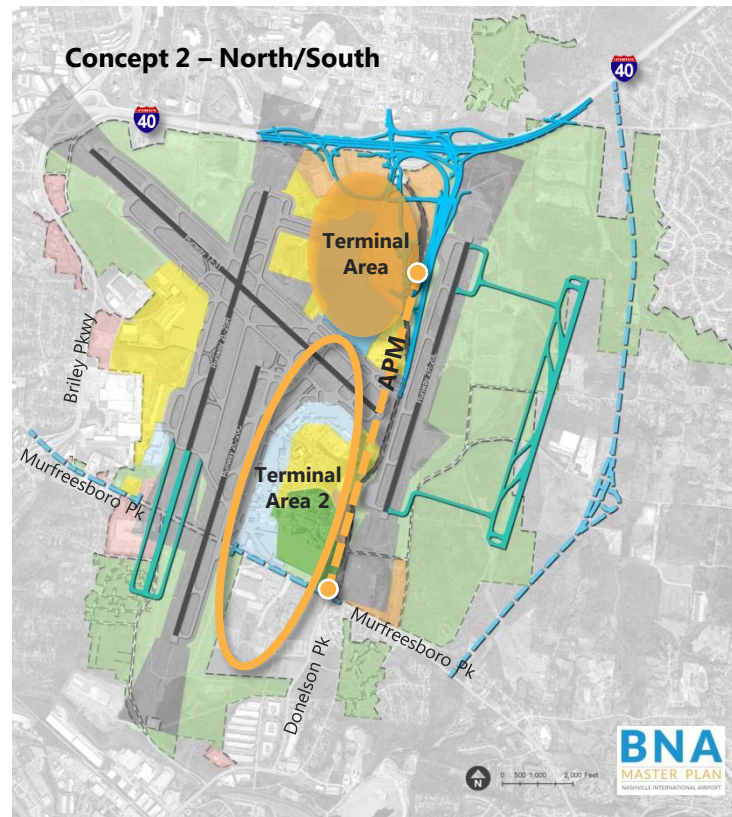
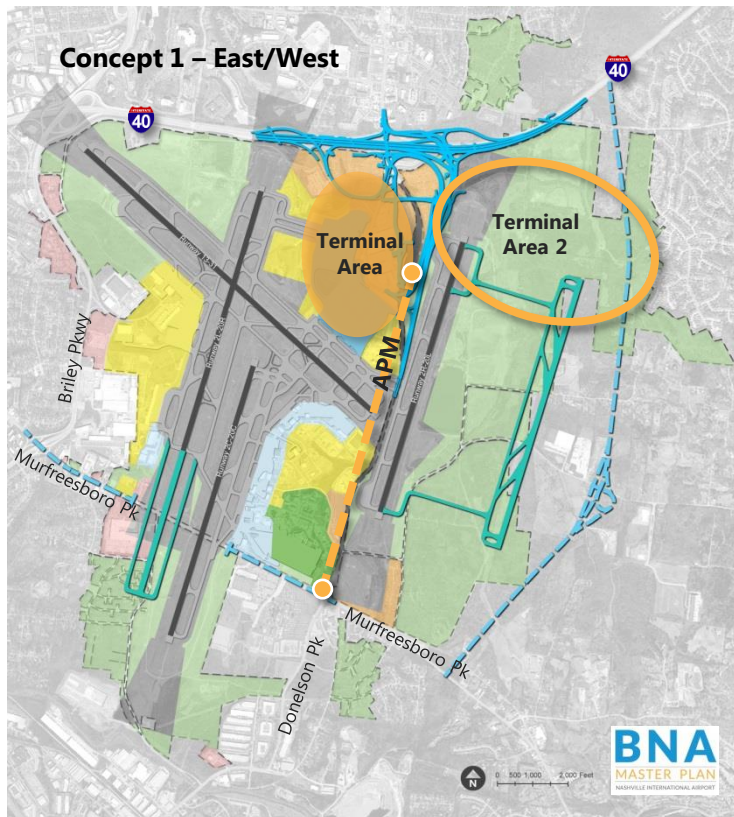
Forecast & Capacity Comparison



Long-Range Development Concepts

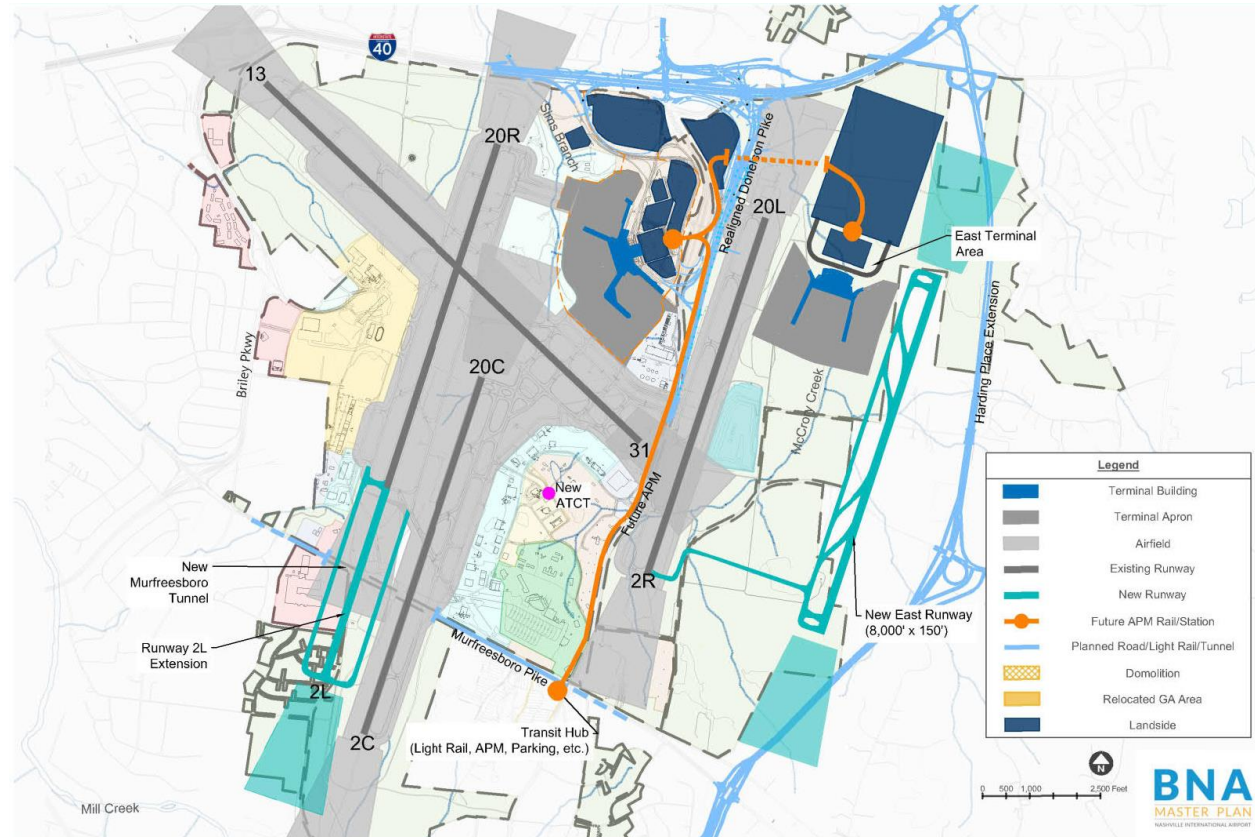


Long-Range Development Concepts - E/W vs N/S



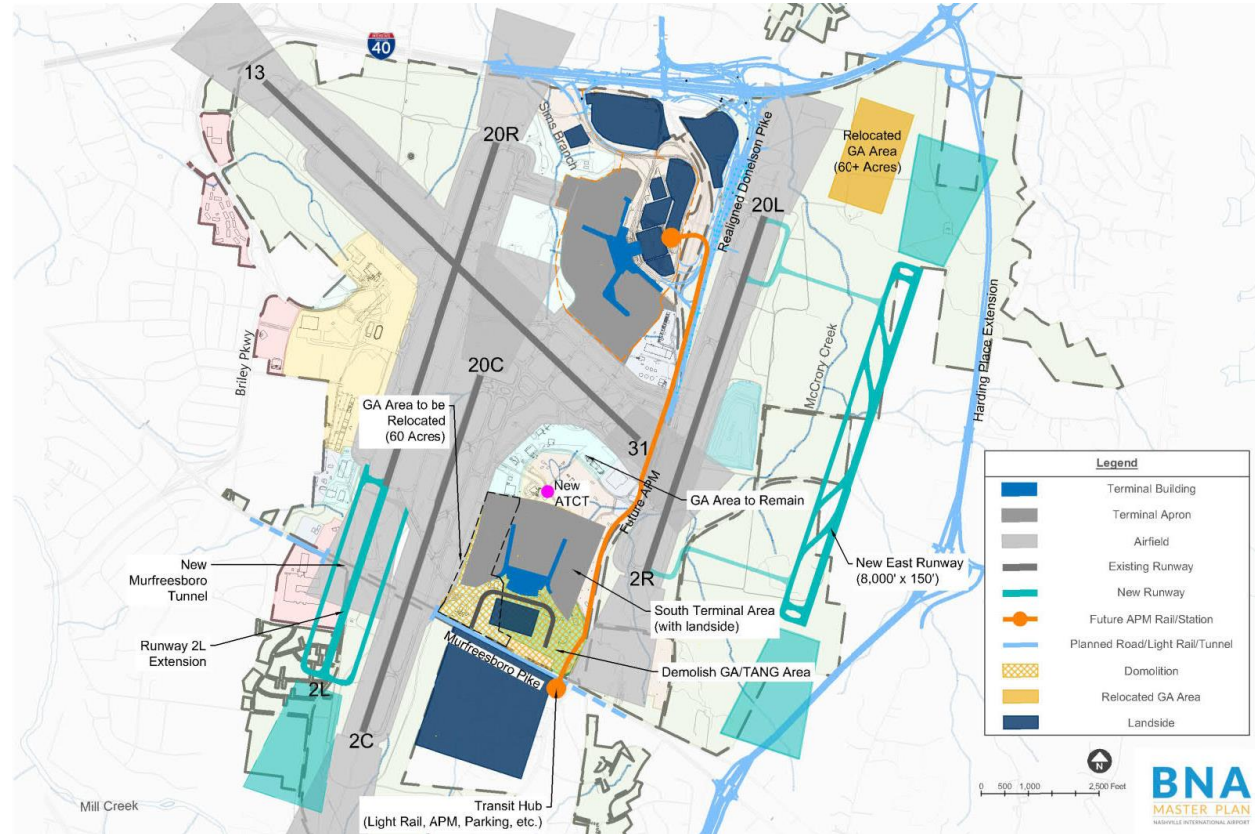
Long-Range Development Concept 1A

- East-West layout
- Split operations



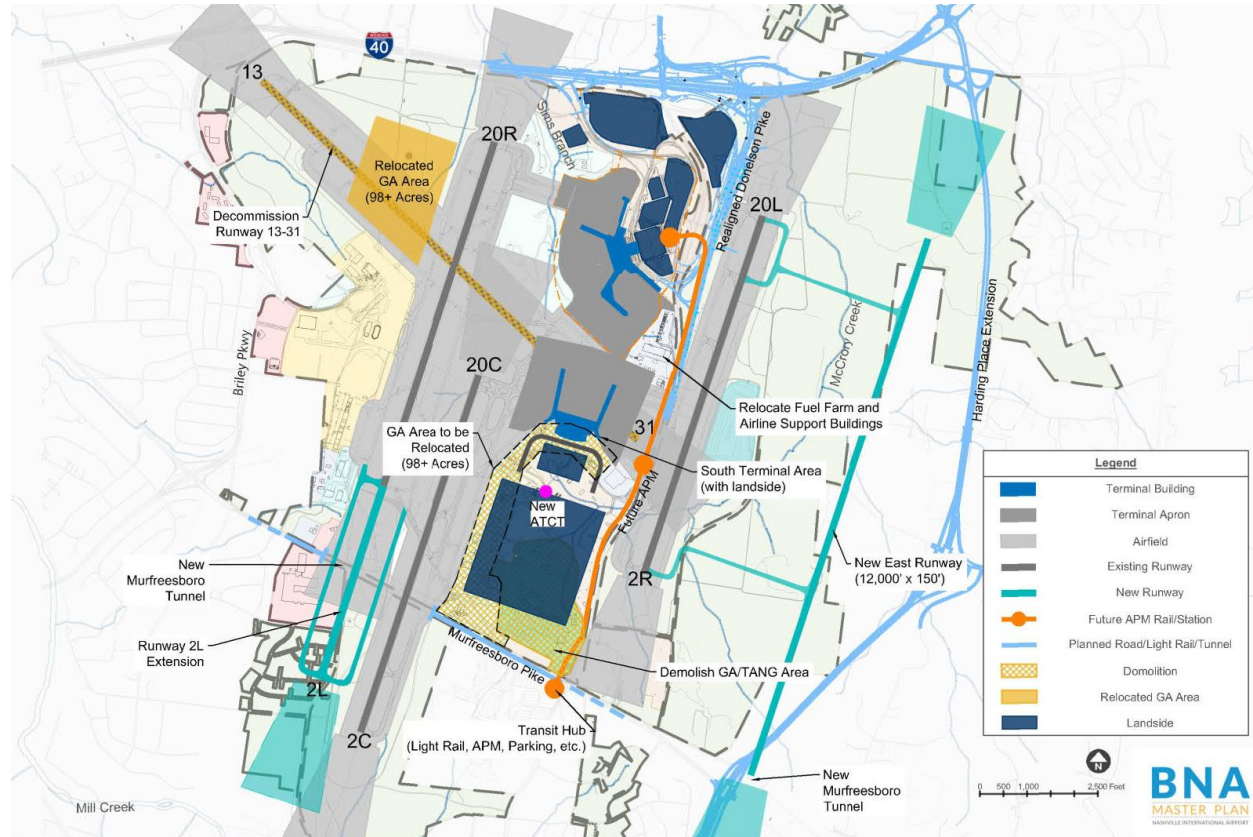
Long-Range Development Concept 2A

- North-South layout
- Split operations



Long-Range Development Concept 2B

- North-South layout
- Joint airside operations

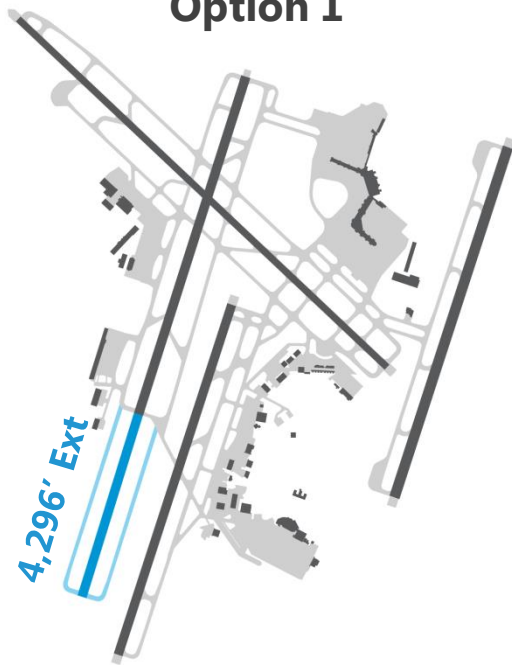


Airfield Alternatives



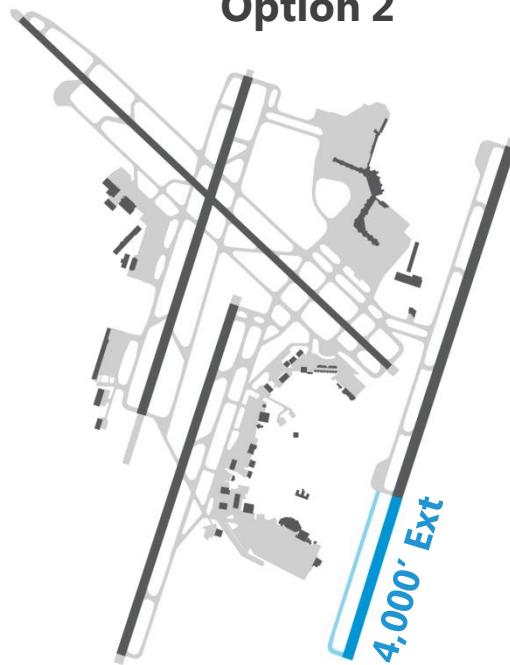
Runway Extension Options - Overview

Option 1



Rwy 2L South Extension
Total 12,000ft

Option 2



Rwy 2R South Extension
Total 12,000ft

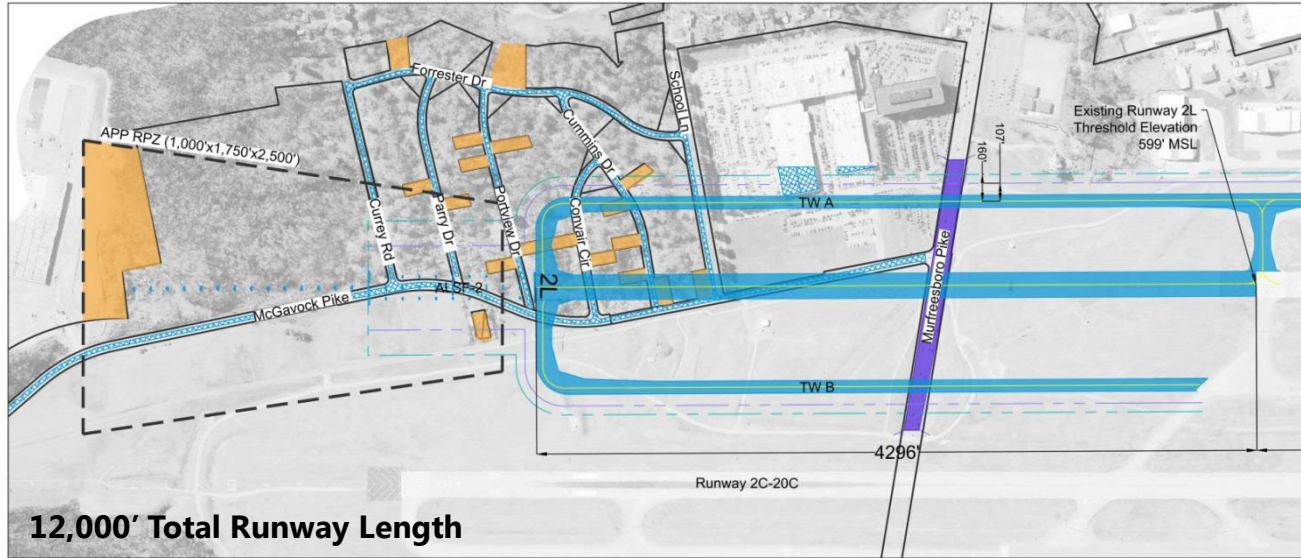
Option 3



Rwy 2R-20L Extensions
Total 13,000ft

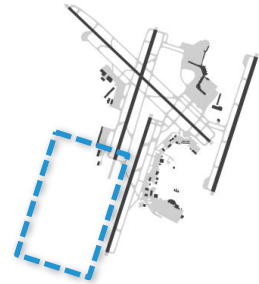


Option 1: Runway 02L (South Extension)



12,000' Total Runway Length

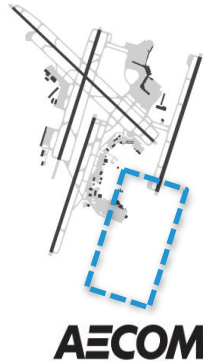
- | | | | |
|---|----------------------------------|---|--|
|  | New Pavement |  | Runway Safety Area/Taxiway Safety Area |
|  | Building Demolition/Road Closure |  | Runway Object Free Area/Taxiway Object Free Area |
|  | Roadway Tunnel/Proposed Roadway |  | Runway Protection Zone |
|  | Property Acquisition |  | Airport Property Boundary |



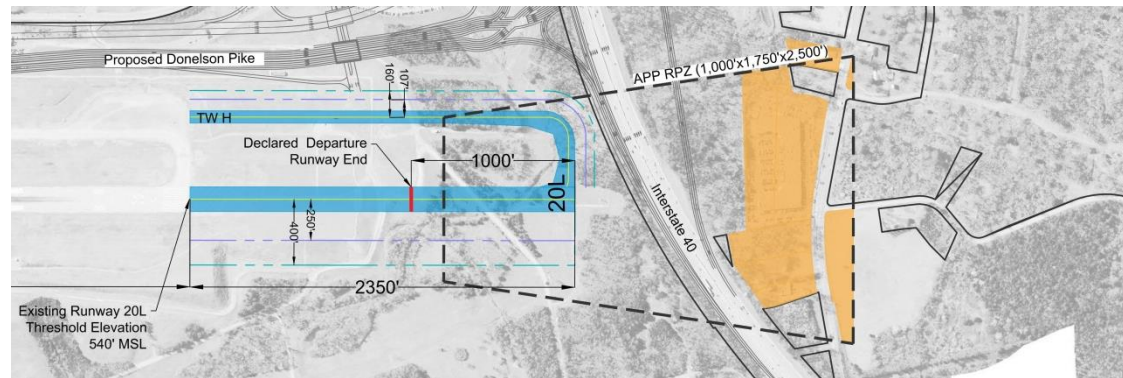
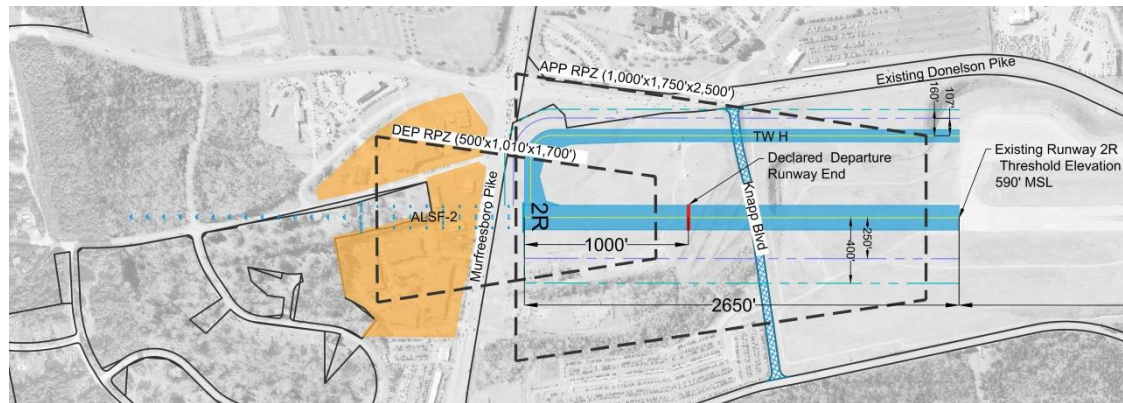
Option 2: Runway 02R (South Extension)



- | | |
|--|--|
|  New Pavement |  Runway Safety Area/Taxiway Safety Area |
|  Building Demolition/Road Closure |  Runway Object Free Area/Taxiway Object Free Area |
|  Roadway Tunnel/Proposed Roadway |  Runway Protection Zone |
|  Property Acquisition |  Airport Property Boundary |



Option 3: Runway 02R-20L (North & South Ext.)



13,000' Total Runway Length

- 12,000' declared and available for takeoff on both 20L and 2R

- New Pavement
- Building Demolition/Road Closure
- Roadway Tunnel/Proposed Roadway
- Property Acquisition
- Runway Safety Area/Taxiway Safety Area
- Runway Object Free Area/Taxiway Object Free Area
- Runway Protection Zone
- Airport Property Boundary

Note:
Roads in the RPZs will require
FAA policy exception review.



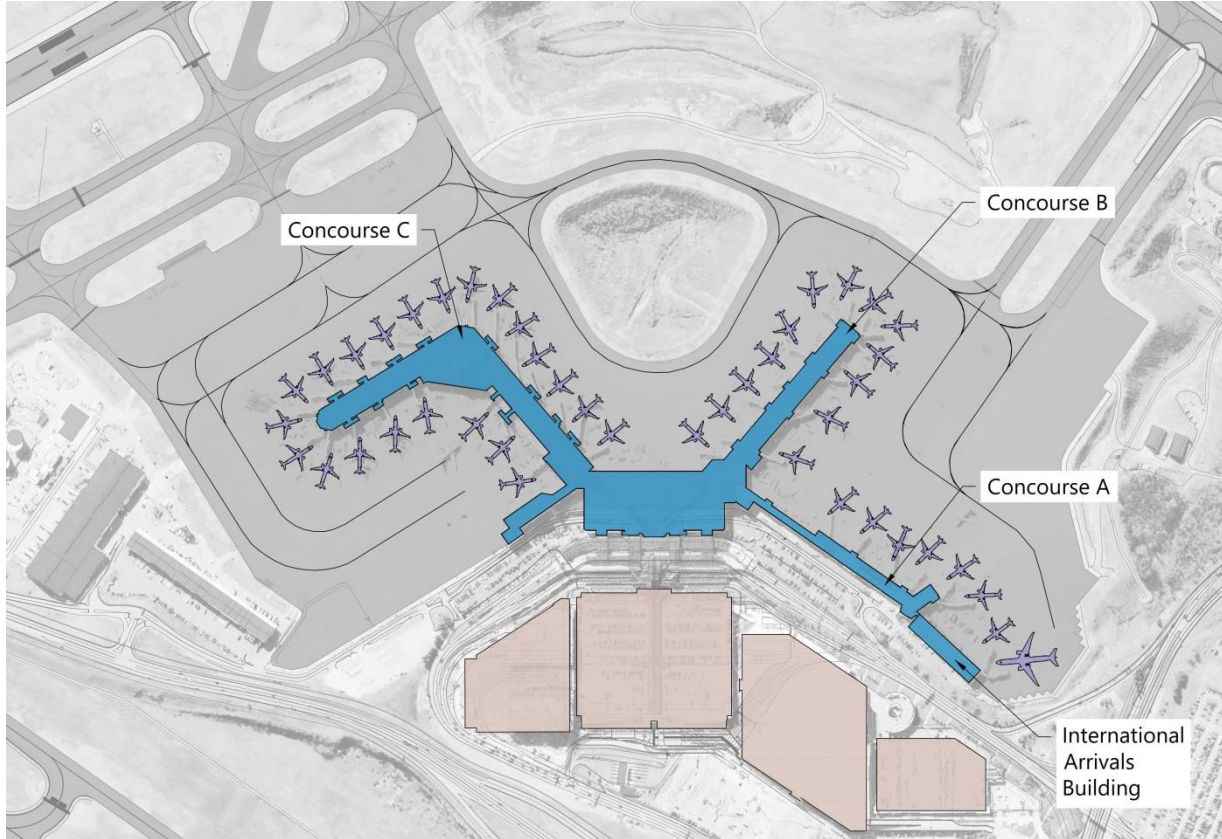
East Runway Alternative



Terminal Alternatives



Existing Terminal 2019



BNA Existing 2018

Concourse A	8
Concourse B	13
Concourse C	22




Total Gates	43
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Walking Distance Existing

Concourse A	1,260
Concourse B	1,025
Concourse C	1,585

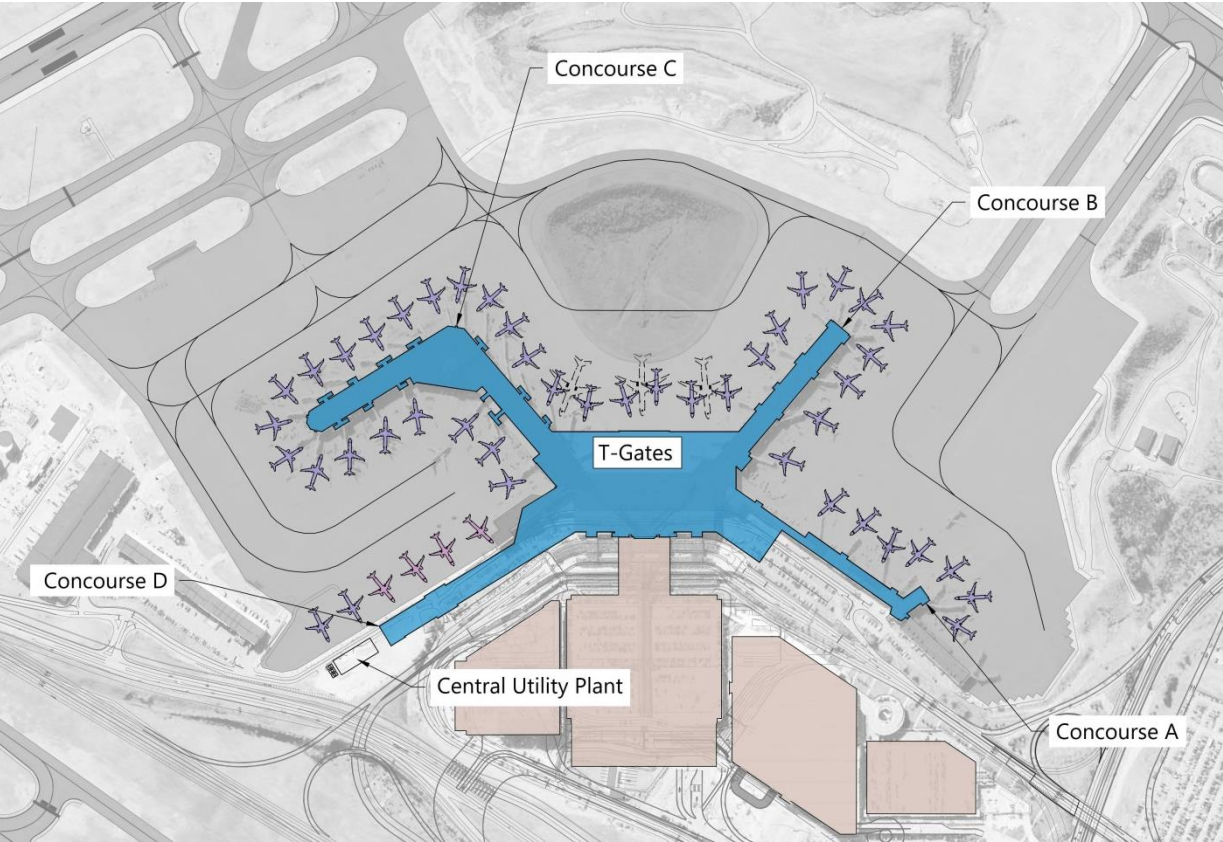
Notes:

1. Walking distances rounded to nearest 5 feet
2. Distances measured from center of SSCP exit to furthest gate
3. Distances are approximate and may vary based on final interior configuration

	Existing
Apron	
Terminal	
Gate	



BNA Vision



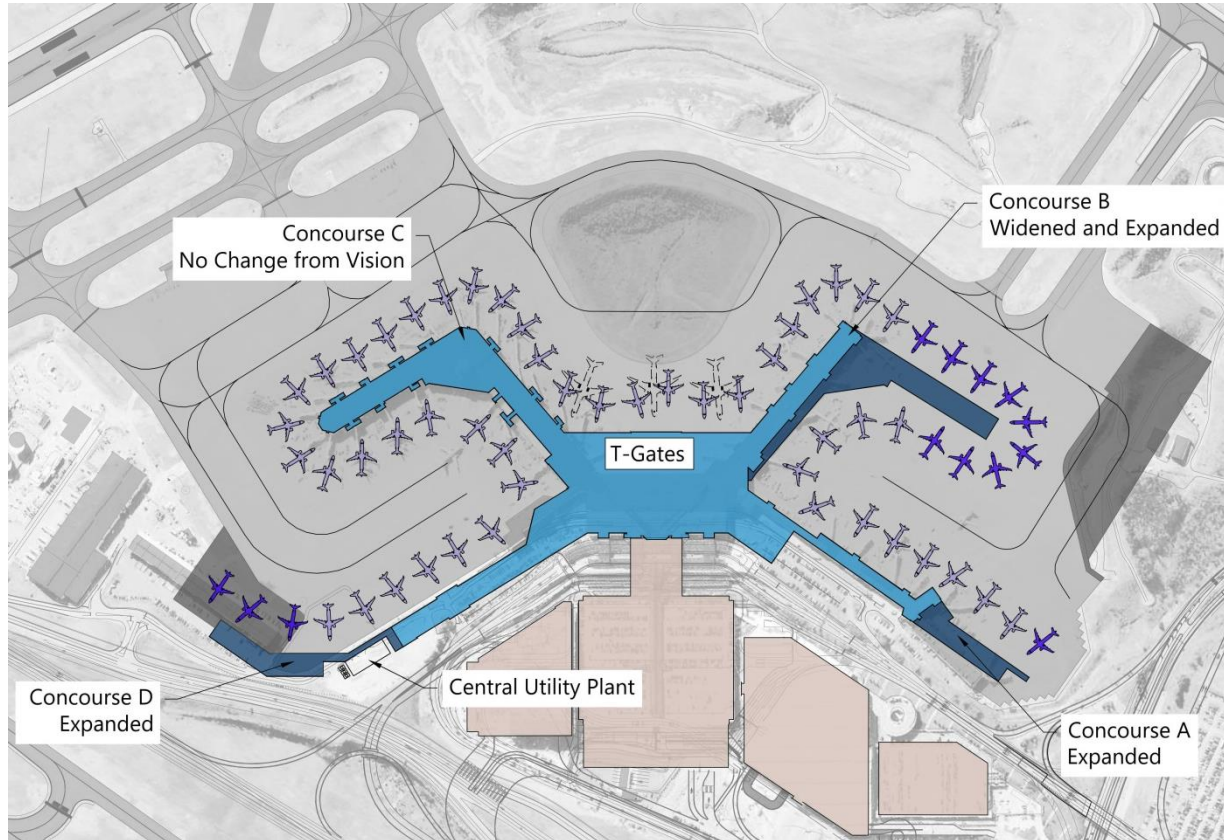
BNA VISION	
Concourse A	7
Concourse B	10
Concourse C	19
Concourse D	6
T-Gates	6
Total Gates	48

Walking Distance	Vision
Concourse A	1,275
Concourse B	1,000
Concourse C	1,575
Concourse D	1,260
T-Gates	390

Notes:
1. Walking distances rounded to nearest 5 feet
2. Distances measured from center of SSCP exit to furthest gate
3. Distances are approximate and may vary based on final interior configuration

	Existing	Proposed
Apron		
Terminal		
Gate		

Alternative 1A



BNA MPU 2037

Option 1A

Concourse A	8
Concourse B	19
Concourse C	19
Concourse D	9
T-Gates	6
Total Gates	61







Walking Distance

Option 1A

Concourse A	1,600
Concourse B	1,625
Concourse C	1,575
Concourse D	2,050
T-Gates	390

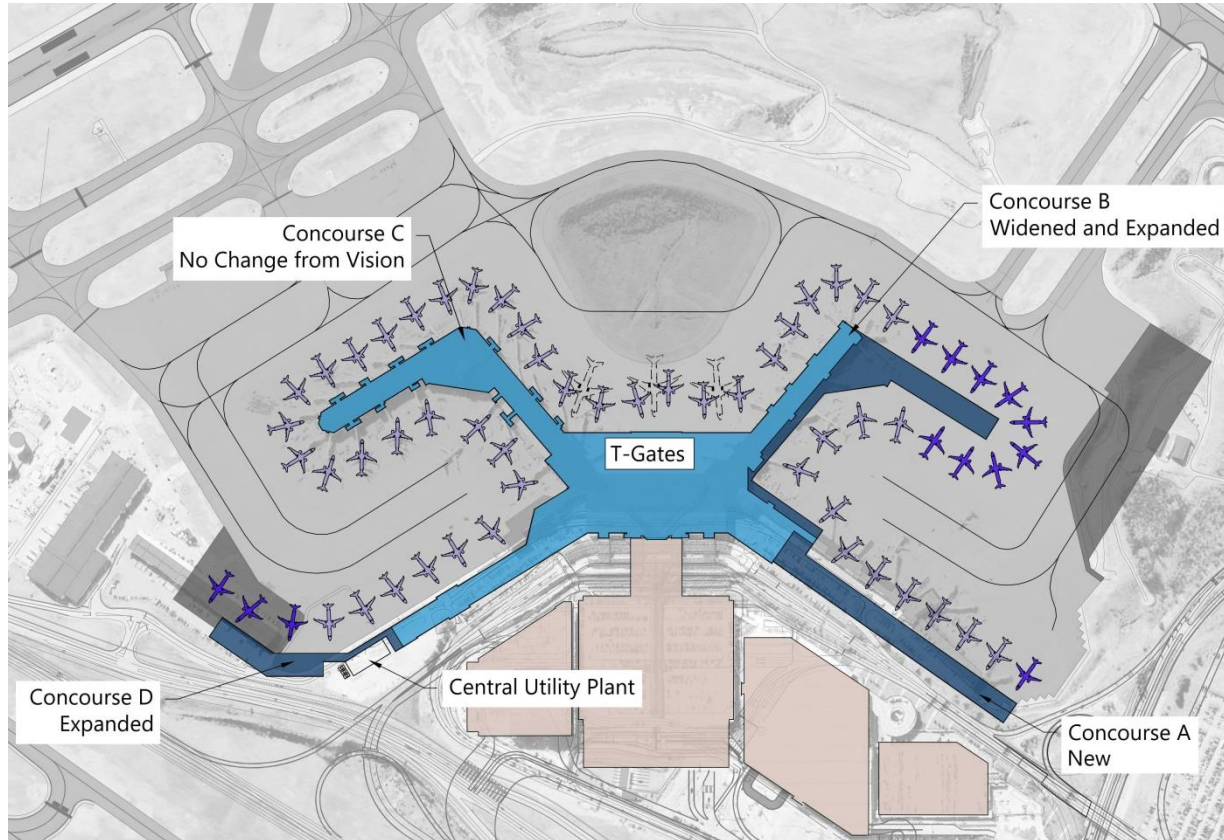
Notes:

1. Walking distances rounded to nearest 5 feet
2. Distances measured from center of SSCP exit to furthest gate
3. Distances are approximate and may vary based on final interior configuration

	Existing	Proposed
Apron		
Terminal		
Gate		



Alternative 1B



BNA MPU 2037

Option 1B

Concourse A	8
Concourse B	19
Concourse C	19
Concourse D	9
T-Gates	6
Total Gates	61







Walking Distance

Option 1B

Concourse A	1,800
Concourse B	1,625
Concourse C	1,575
Concourse D	2,050
T-Gates	390

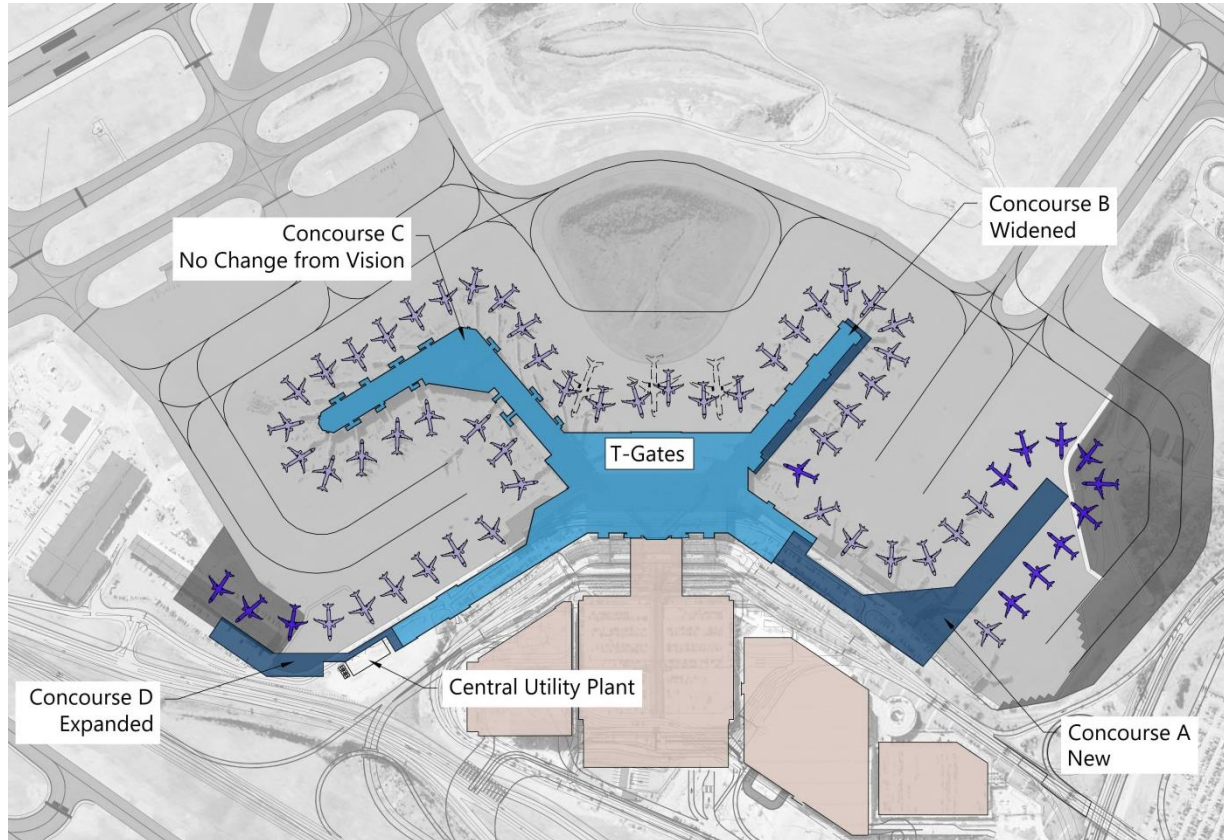
Notes:

1. Walking distances rounded to nearest 5 feet
2. Distances measured from center of SSCP exit to furthest gate
3. Distances are approximate and may vary based on final interior configuration

	Existing	Proposed
Apron		
Terminal		
Gate		



Alternative 2



BNA MPU 2037

Option 2

Concourse A	16
Concourse B	11
Concourse C	19
Concourse D	9
T-Gates	6
Total Gates	61

Walking Distance

Option 2

Concourse A	2,200
Concourse B	1,000
Concourse C	1,575
Concourse D	2,050
T-Gates	390

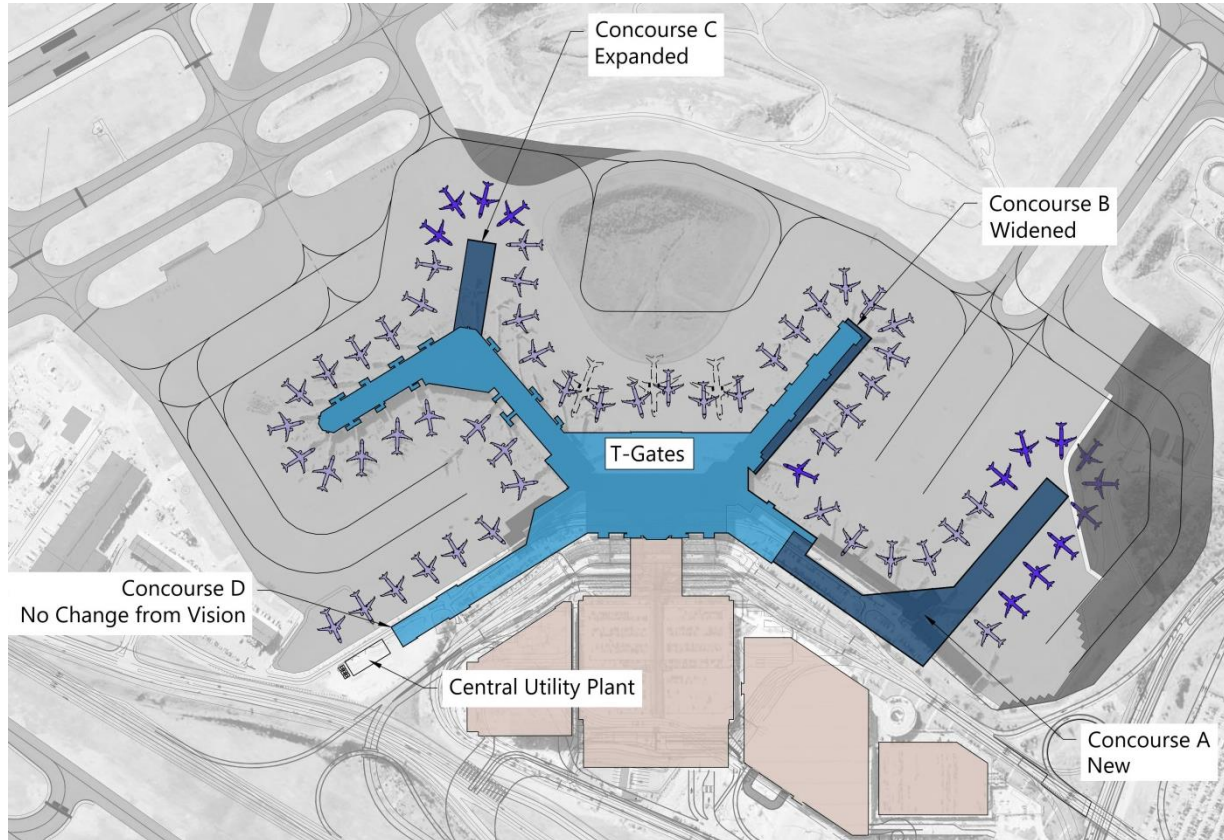
Notes:

1. Walking distances rounded to nearest 5 feet
2. Distances measured from center of SSCP exit to furthest gate
3. Distances are approximate and may vary based on final interior configuration

	Existing	Proposed
Apron		
Terminal		
Gate		



Alternative 3



BNA MPU 2037

Option 3

Concourse A	16
Concourse B	11
Concourse C	23
Concourse D	6
T-Gates	6
Total Gates	62

Walking Distances

Option 3

Concourse A	2,200
Concourse B	1,000
Concourse C	1,575
Concourse D	1,260
T-Gates	390

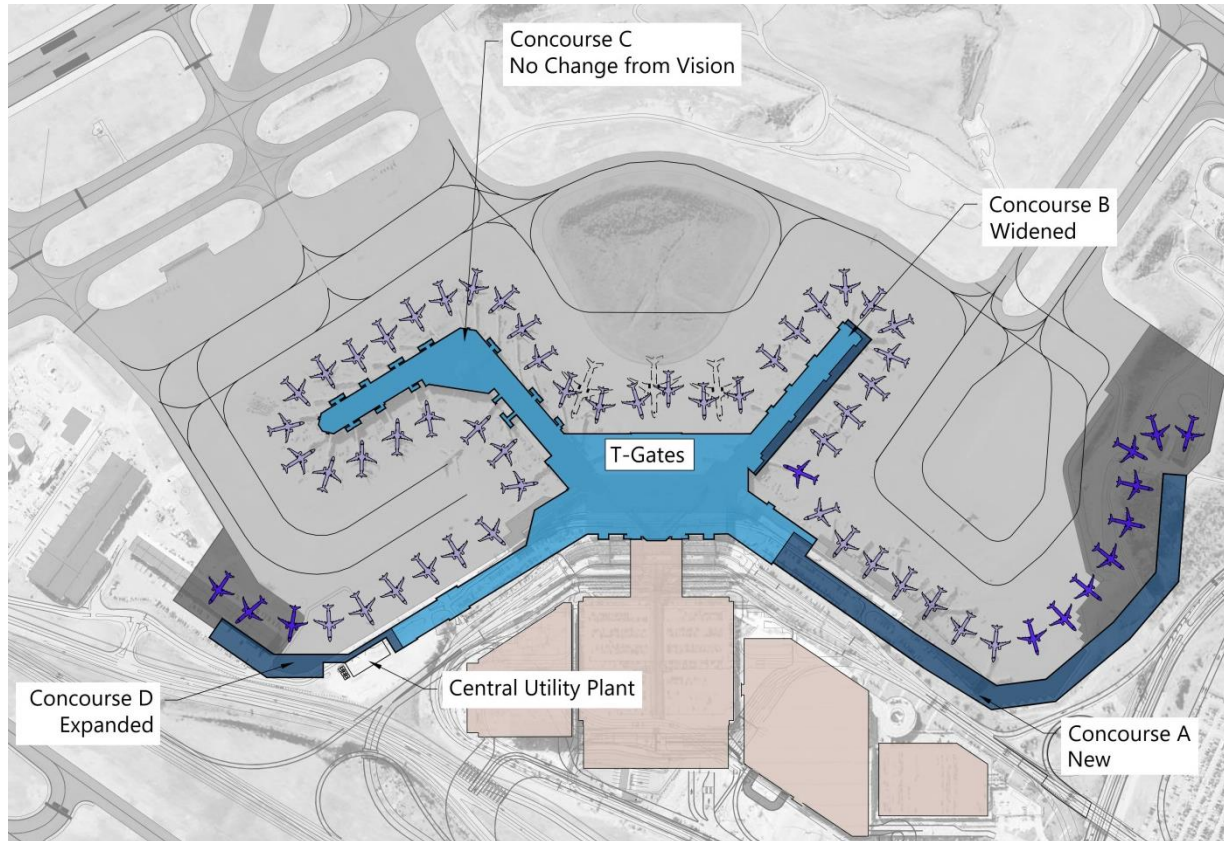
Notes:

1. Walking distances rounded to nearest 5 feet
2. Distances measured from center of SSCP exit to furthest gate
3. Distances are approximate and may vary based on final interior configuration

	Existing	Proposed
Apron		
Terminal		
Gate		



Alternative 4



BNA MPU 2037

Option 4

Concourse A	16
Concourse B	11
Concourse C	19
Concourse D	9
T-Gates	6
Total Gates	61

Walking Distances

Option 4

Concourse A	2,975
Concourse B	1,000
Concourse C	1,575
Concourse D	2,050
T-Gates	390

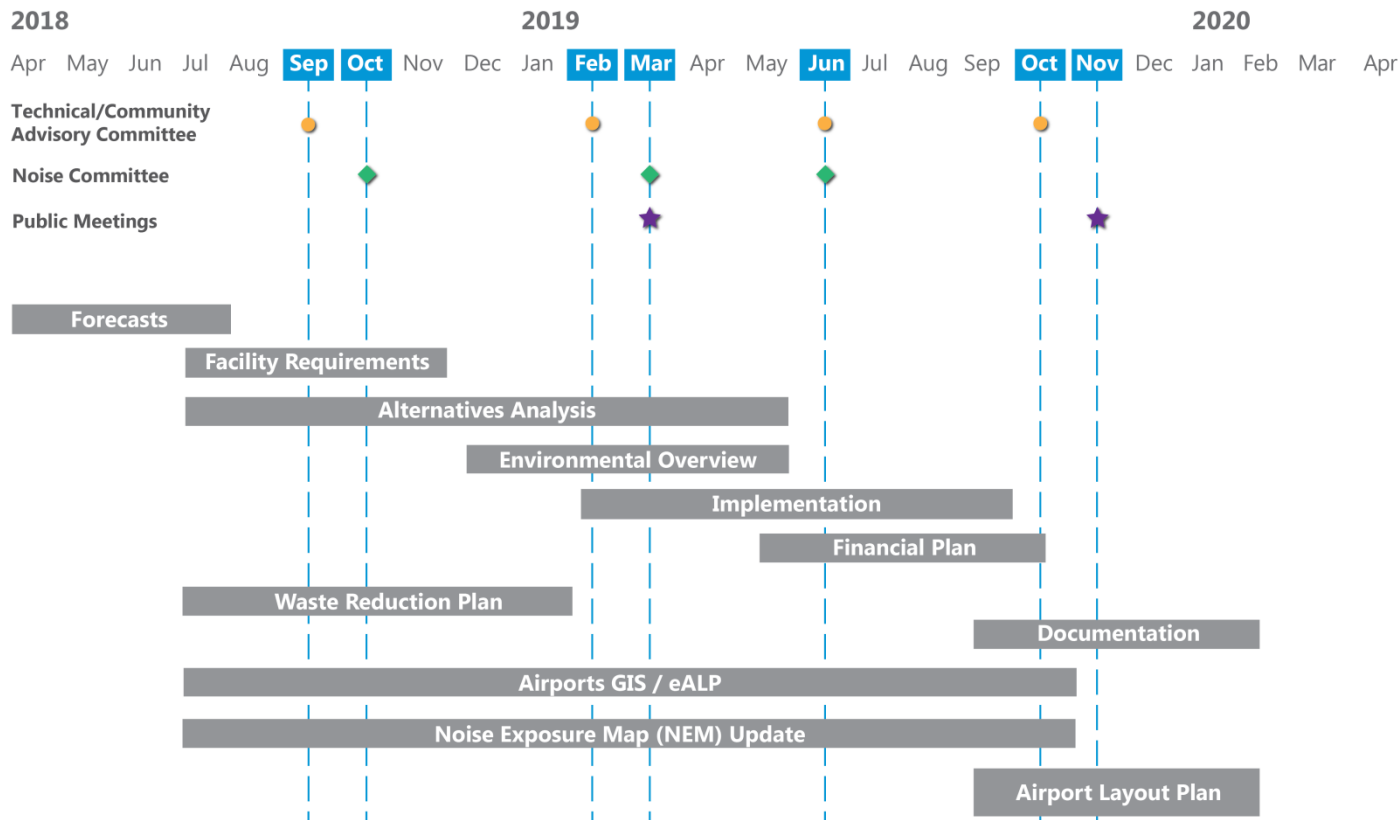
Notes:

1. Walking distances rounded to nearest 5 feet
2. Distances measured from center of SSCP exit to furthest gate
3. Distances are approximate and may vary based on final interior configuration

	Existing	Proposed
Apron		
Terminal		
Gate		



Project Schedule



Thank You for Your Participation!

Public Information Open House March 5, 2019 (5-8pm)

*Metro Southeast, 1417 Murfreesboro Pike
Nashville, TN 37217*

Next TAC meeting June 2019

Follow the Master Plan Update on

<https://www.flynashville.com/about/Pages/MasterPlan.aspx>

Comments or Questions

<https://www.flynashville.com/contact/Pages/commentandsandquestions.aspx>



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