Memorandum

To: Sean Scanlon, Tweed Airport **Date: February 10, 2021**

From: Nick Campbell, FHI

Subject: **Tweed Airport Master Plan Update**
Technical Advisory Committee Meeting #3
Summary of 1/5/2021 Meeting

The third Technical Advisory Committee (TAC) meeting for the Tweed New Haven Airport (HVN) Airport Master Plan Update (APMU) was conducted from 5:00 pm to 6:30 pm on January 5, 2021. The meeting was held virtually due to COVID-19. The TAC meeting was attended by 14 TAC members along with several members of the project team and HVN staff.

Jeff Wood, with McFarland Johnson (MJ), welcomed the TAC members, and Sean Scanlon, Executive Director of Tweed New Haven Airport, provided a brief overview of the goals of the AMPU. Mr. Scanlon introduced Jeremy Nielson, the airport manager for HVN. Mr. Wood went over the general organization of the virtual meeting and the agenda for the evening. Mr. Wood updated the committee on the project schedule, and he and Laura Canham (MJ) presented an update on the AMPU, which was followed up by questions and discussion with TAC members. The presentation is attached.

Mr. Wood presented the constrained and unconstrained runway length facility requirements identified. In addition, Mr. Wood highlighted the different alternatives under consideration to increase the operational reliability of the airport, while understanding that the runway length needs to balance operational reliability, safety, community, and environmental impacts. Mr. Wood presented the various alternatives that the project team had developed for the airfield by identifying existing constraints and areas of the airport that should be enhanced to comply with Federal Aviation Administration (FAA) regulations. Mr. Wood emphasized that the optimal runway length of 7,600 feet was not feasible and was not being considered in any alternatives moving forward. Several runway and taxiway alternatives were presented with the goal of accommodating the existing and future design aircraft anticipated to use HVN. The runway alternatives include a 6,635-foot-long runway plus Engineered Materials Arresting System (EMAS) that meets both runway end declared distances of at least 6,000 feet.

Ms. Canham presented three terminal alternatives. Ms. Canham identified existing issues with the current terminal in its existing location and size, and potential benefits that could be realized by considering alternate terminal locations or configurations. In particular, vehicle access to the Airport is constrained and is provided through residential neighborhoods, which is not ideal and proves an incompatible land use surrounding the existing terminal location. An alternative location was proposed on the east side of the airport, which would alleviate the incompatible land use and improve roadway access.

General Aviation (GA) hangars and other ancillary buildings could be constructed and/or expanded to meet future demand and generate revenue opportunities for the airport. If the terminal were relocated, there could be opportunities to provide wetland mitigation on the west side.

TAC members asked questions and shared comments related to the presentation. The following is a summary of the questions and comments by TAC members and key discussion points.

- A member of the TAC commented that they were pleased to be receiving more messages from the project team with regards to the project.
- In response to a TAC member query, Mr. Wood commented that the GA alternatives proposed were just samples and that there was a lot of potential for the final configuration of hangar space. GA development would be demand based.
- Another member of the TAC asked if there was an image that displayed all the alternatives on one graphic. The project team proceeded to sketch the various alternatives on the aerial image in the presentation.
- One member commented on the proximity of the wetlands to the proposed terminal and inquired how access would be facilitated. In response, the project team noted that the wetlands will likely be bridged, though wetland impacts are anticipated.
- A discussion ensued on the size of the proposed parking area to be reserved and the effect that would have on the airport, traffic, and the environment. Green parking alternatives and/or reduced parking were suggested by TAC members. It was noted that cities, like Hartford, are starting to reduce parking requirements for businesses. Mr. Wood indicated stormwater management will be a high priority with the parking area. The parking area includes a buffer of space and includes roadway and could be a placeholder to include transit and other items besides just vehicle parking.
- Another TAC member mentioned that airport traffic control tower visibility should be reviewed with the location of some proposed and existing hangars, as well as the need to include parallel taxiways in addition to the runway expansion. The project team confirmed that control tower visibility should be assessed prior to any buildings being constructed and that GA alternatives are demand driven. The GA alternatives presented were a visualization to confirm that HVN could meet the facility requirement needs identified, but ultimate development will likely look different.

Following the alternatives discussion, Mr. Wood laid out the next steps of the AMPU process, which involves the following steps:

- Selection of the preferred alternative
- Airport Layout Plan FAA approval
- The National Environmental Policy Act (NEPA) environmental review process
- Final design, permitting, and implementation.

These next steps resulted in two additional questions from TAC members, one asking for confirmation of the presentation being distributed, and the other if cost estimates had been started for the various proposals. Mr. Wood confirmed the presentation would be distributed, and he stated that cost estimates will be prepared for all aspects of the preferred alternative.

Attendees:

- Sean Scanlon, HVN
- Jeremy Nielson, HVN/Avports
- Felipe Suriel, HVN/Avports
- Lisa Lesperance, FAA
- Barry Hammer, FAA
- Julie Seltsam, FAA
- Bob Bruno, Connecticut Airport Authority
- Charles Skelton, Yale Aviation / CFI
- Don Relihan, Yale University
- Douglas Hausladen, City of New Haven
- Eliot Jameson, Tweed-New Haven Airport Authority (TNHAA) Volunteer
- Giovanni Zinn, City of New Haven,
- James Yeske, TNHAA
- Rasmus Agerskov, Avports
- John Olson, Midwest Air Traffic Control Services
- Johnson Chang-Fong, Technical Representative Avports Engineering
- Andrew King, Avports
- Jeff Wood, MJ
- Laura Canham, MJ
- Steve Bourque, MJ
- Nick Campbell, Fitzgerald & Halliday, Inc.
- Laurel Stegina, Fitzgerald & Halliday, Inc.

tweed NEW HVN
Southern Connecticut's Airport

MASTER PLAN UPDATE

Tweed-New Haven Airport Authority

Advisory Committee Meetings Jan. 5, 2021

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Logistics

- Meeting Recording
- Please Mute Your Microphone
- Sign-In Sheet - Please Send a Chat with:
  - Name
  - Affiliation
  - Email Address
- Questions Will be Addressed at the End
  - Send a Chat any Time During the Presentation
  - Open Mic Q&A at the Conclusion

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Introductions

- Sean Scanlon, Executive Director
- Jeremy Nielson, Airport Manager
- Attendees

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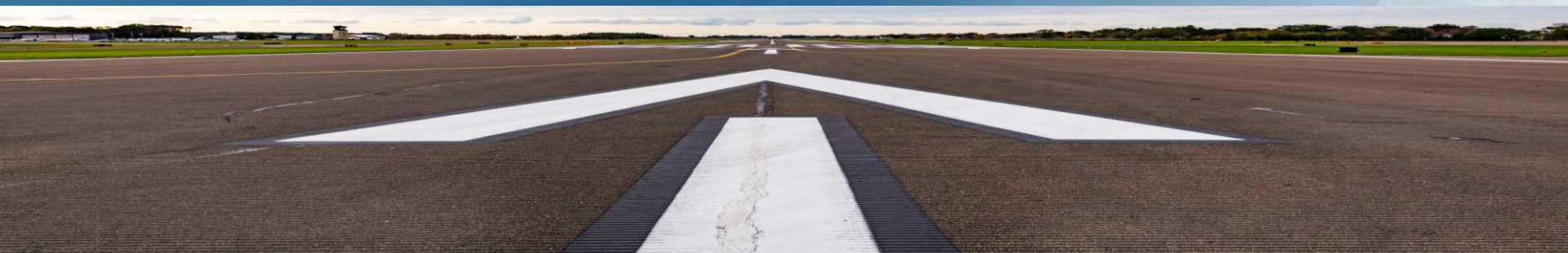
Agenda

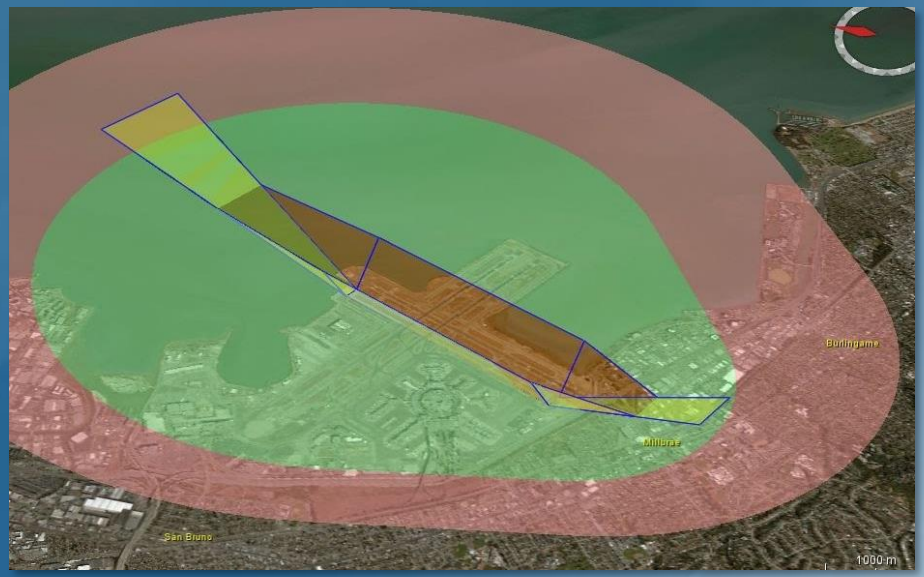
- Introductions
- Facility Requirements Summary
- Alternatives
- Next Steps
- Conclusion/Questions



Facility Requirements

Inventory | Forecasts | Environ-mental Overview | **Facility Requirements** | Alternatives | Airport Layout Plan (ALP)

- Goal: Identify Needs for Alternatives
  - Compare Existing Conditions To:
    - FAA Safety Standards
    - FAA Design and Geometry Standards
    - Code of Federal Regulations Airspace Surfaces
    - Forecasts



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Runway Length

- **Goal:** Provide Adequate Runway Length to Leisure Destinations in the Southeast
- Runway Length Needs to Balance Operational Reliability, Safety, Community, and Environmental
- Reliability is Critical for Sub-Daily Operators – the Longer a Runway, the More Reliable Service Can Be
- **Unconstrained Recommendation:** 7,600’ – this is **NOT** Feasible
- **Constrained Recommendation:** 6,635’

Find Balance between Airport Limitations and Operational Reliability

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Comparative Routes

Airport	Destinations	Runway Length	Aircraft Type
Westchester	Fort Myers, FL (958 nm)	6,549 feet	A320
Ogdensburg	Orlando-Sanford, FL (993 nm)	6,400 feet	A319, A320
Trenton-Mercer	Miami, FL (911 nm)	6,006 feet	A319, A320
Chicago Midway	Fort Lauderdale, FL (1,015 nm)	6,522 feet	B737

Recommended Runway Length Balance

- Constrained Recommendation of 6,635 Feet Balances the Following:

Safety

Community

Environmental

Fiscal

Regulatory

Operational

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Airside Facility Requirements Summary

Item/Facility	Demand
Runway Length	6,635’
Runway Safety Area	Review Fence and Road in Runway 20 RSA Address RSA Transverse Grading
Runway Object Free Area	Review Fence, Road, and NAVAIDs in Runway 20 ROFA
Runway Protection Zone	Control of All RPZs Through Ownership or Avigation Easements
Runway Lighting	Update to Cable in Conduit Remove Runway 14-32 Lights
Runway Visual Aids	Upgrade to MALSR Runway 2 Install REIL on Runway 20
Instrument Approaches	Lower Runway 2 Minimums, if Possible Provide Vertical Guidance to Runway 20, if Possible
Taxiways	Full Parallel Taxiway to Runway 2-20 that Meets FAA Design Standards Address Taxilane/Taxiway Object Free Areas Address Airfield Geometry Concerns and Meet FAA Standards

Airfield Geometry Standards

- High Energy Intersection
- Direct Access
- Taxiway Intersecting Runway at Other Than a Right Angle
- Unexpected Hold Lines

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Passenger Terminal Requirements

Terminal Functional Area	Existing Provision	100 Peak-Hour Passengers	150 Peak-Hour Passengers	200 Peak-Hour Passengers	250 Peak-Hour Passengers
Check-In /Ticketing	1,648	949	1,446	1,897	2,394
Baggage Screening & Makeup	751	3,115	3,240	3,240	3,240
Security Screening Checkpoint	1,356	4,883	4,981	6,366	8,854
Secure Holdrooms	1,865/1,511	5,780	6,878	9,072	12,364
Baggage Claim and Inbound Baggage	769	5,566	4,292	8,820	12,265
Concessions	1,090	2,078	3,117	4,156	5,194
Other Functions/Tenants	5,810	12,286	15,644	17,871	23,689
Total	14,800	34,657	39,598	51,422	68,000
Passenger Terminal Requirement Range		30,000-35,000	35,000-40,000	50,000-55,000	65,000-70,000

Recommendation Priorities:

1) Expand Baggage Claim Area
2) Expand Secure Holdroom
3) Expand Security Checkpoint
4) Expand Circulation and Support Facilities
5) Expand Outbound Baggage Screening Area (In-line System)

Total Additional Space - 20,000-55,000 SF

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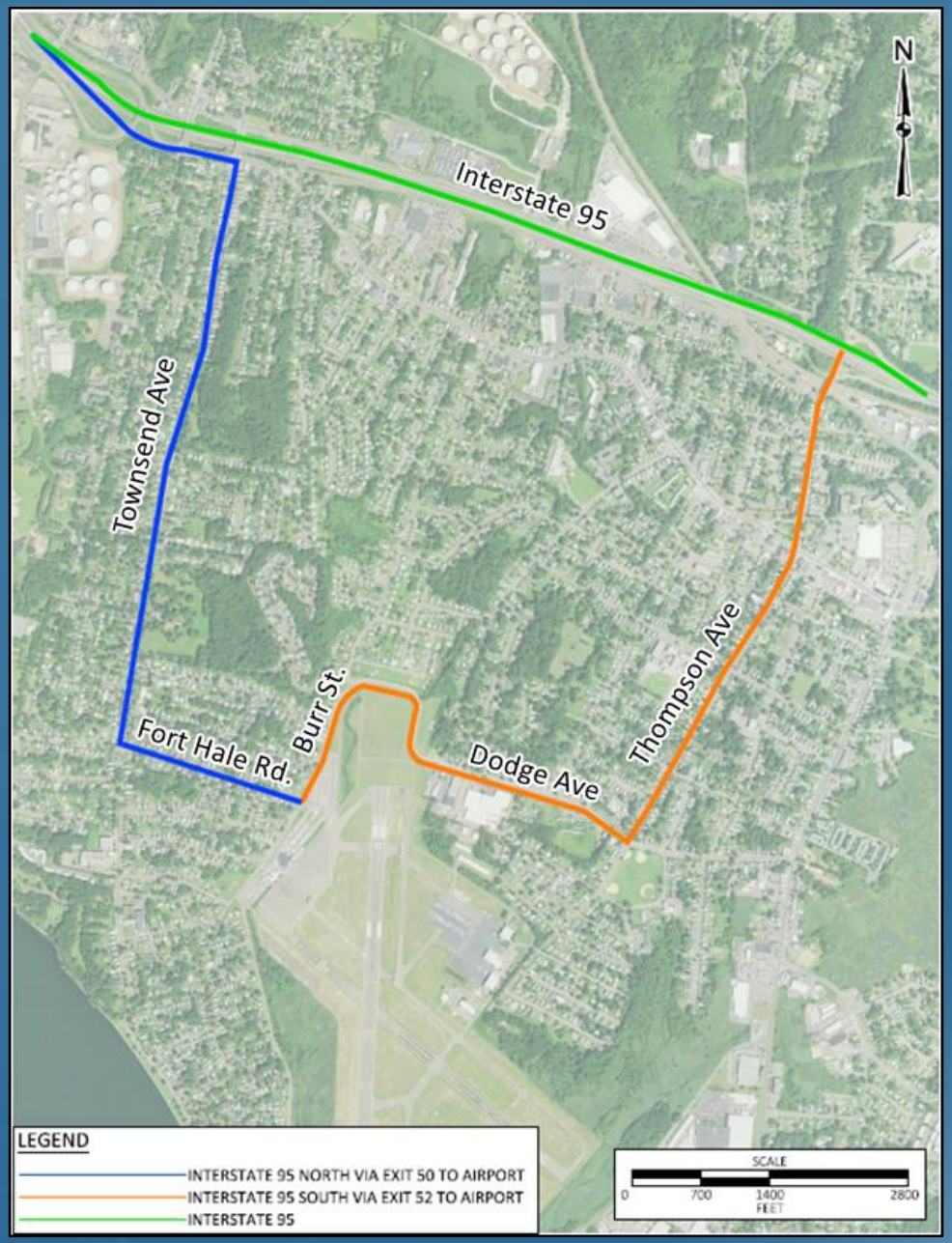
Airport Access



Access Route	I-95 N via Exit 50	I-95 S Via Exit 52
Stops	5	6
Speed Limit	25-30 mph	25-30 mph
Driving Through	Residential	Residential

Ideal Airport Access:

- **Through Commercial/Industrial (Avoid Residential Areas)**
- **Few Stops**
- **Expedient – High Speed Limits**

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GA and Landside Facility Summary

Item/Facility	Demand
Hangars	2 Additional Individual Hangars 44,200 SF Additional Conventional Hangar Business Hangar(s) Private Investment
General Aviation and Admin Parking	Deficiencies: Existing: 99, Future: 121
General Aviation Fueling	Plan for Electric Aircraft Parking and Charging Additional Fuel Tanks as Needed
Utilities	Improve Terminal Power Load
Airport Traffic Control Tower	Upgrade and/or Replace Building and Technology Provide a Full Power Generator
Aircraft Rescue and Fire Fighting	Increase ARFF from 4,500 SF to 6,500 SF
Maintenance/ Snow Removal Equipment	Increase Maintenance/SRE from 9,500 SF to at least 22,000 SF Replace Vehicles Per Eligibility
Other	Electric Automobile Charging Stations Drainage Study Resiliency Planning

Alternatives

Inventory | Forecasts | Environ-mental Overview | Facility Requirements | **Alternatives** | Airport Layout Plan (ALP)

- Airfield Alternatives
- Terminal Alternatives
- General Aviation Alternatives

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Runway Alternatives Process

- Identify Critical Runway Length Need
  - Accelerate Stop Distance Available
  - Landing Distance Available
- Review the Constraints: Generally, Remain Within the Existing Safety Areas Due to Environmental Constraints and Community Feedback
- Alternatives:
  (1) No EMAS, (2) With EMAS
  - Weighing Pros and Cons
- Preferred Alternative and Potential Changes Will Be Determined Based on Feedback
- Next Step: FAA Will Evaluate the Documentation

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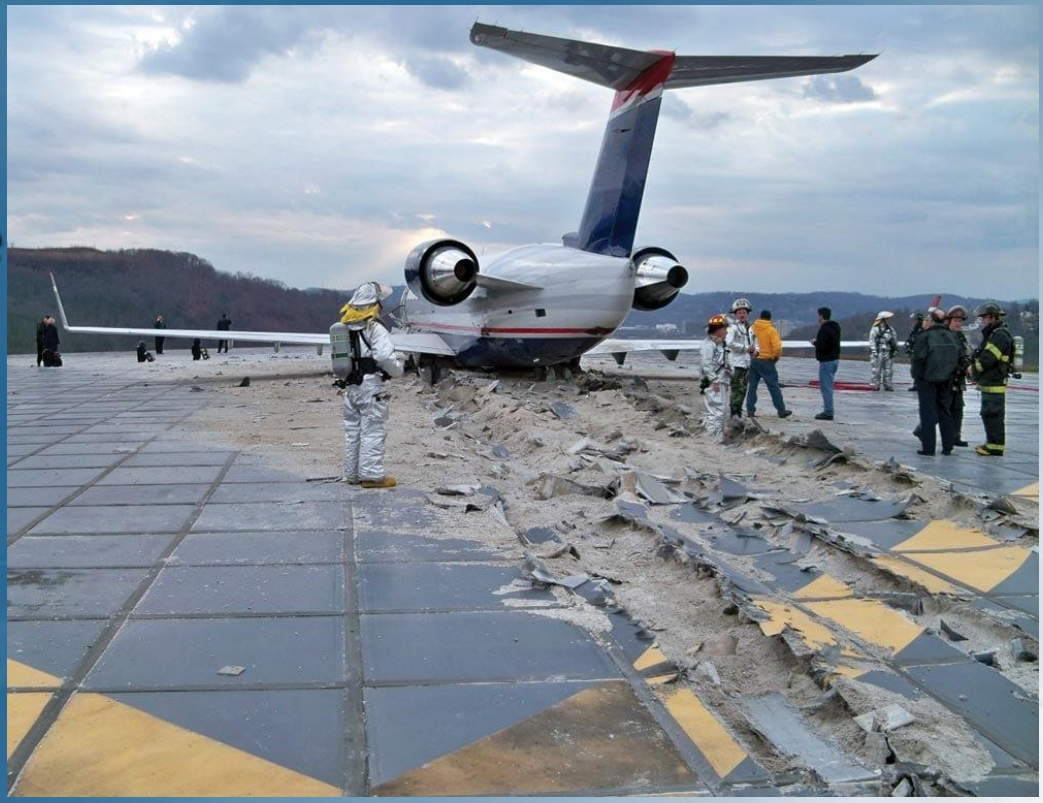
Engineered Materials Arresting System

- EMAS: Crushable Material Placed at the End of a Runway to Stop an Aircraft That Overruns a Runway
- Aircraft Tires Sink Into Lightweight Material, Decelerating the Aircraft
- EMAS Improves Safety When 1,000 feet of Overrun is Not Available



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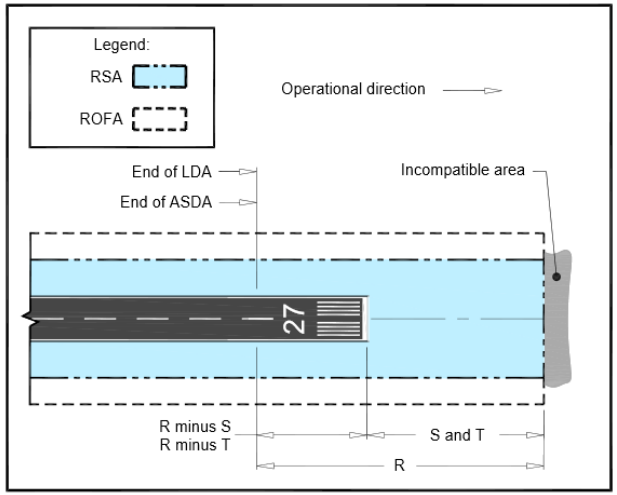
Declared Distances

- Represent the Maximum Distances Available for Meeting Takeoff (TORA/TODA), Rejected Takeoff (ASDA), and Landing Distance (LDA) Performance Requirements
- Used for a Variety of Purposes
  - Obtain Additional RSA/ROFA
  - Mitigate Unacceptable Incompatible Land Uses in RPZ
  - Meet Runway Approach and/or Departure Surface Clearance Requirements
  - Mitigate Environmental Impacts
- Only Acceptable When It Is Impractical to Meet Design Requirements

Figure H-9. Adjusted ASDA and LDA Stop End for the RSA



Note 1: When a stopway exists, see Figure H-11 for the stop end of the ASDA.
Note 2: S denotes the existing or proposed length of the RSA beyond the runway end.
Note 3: T denotes the existing or proposed length of the ROFA beyond the runway end.
Note 4: When declared distances are used as an incremental improvement and R is not obtainable beyond the LDA, this dimension equals the length of RSA obtainable beyond the ASDA.
Note 5: When declared distances are used as an incremental improvement and R is not obtainable beyond the LDA/ASDA, this dimension may equal the length of RSA obtainable beyond the LDA/ASDA minus S.

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Constraints

LEGEND

- RUNWAY SAFETY AREA
- RUNWAY OBJECT FREE AREA
- RUNWAY PROTECTION ZONE
- AIRPORT PROPERTY LINE
- AIRPORT EASEMENT
- WETLAND BOUNDARY
- RESIDENTIAL AREA
- ROADS

Constraints Include:

- Residential
- Roads/Streets
- Navigational Aids
- Wetlands/Creeks/Streams

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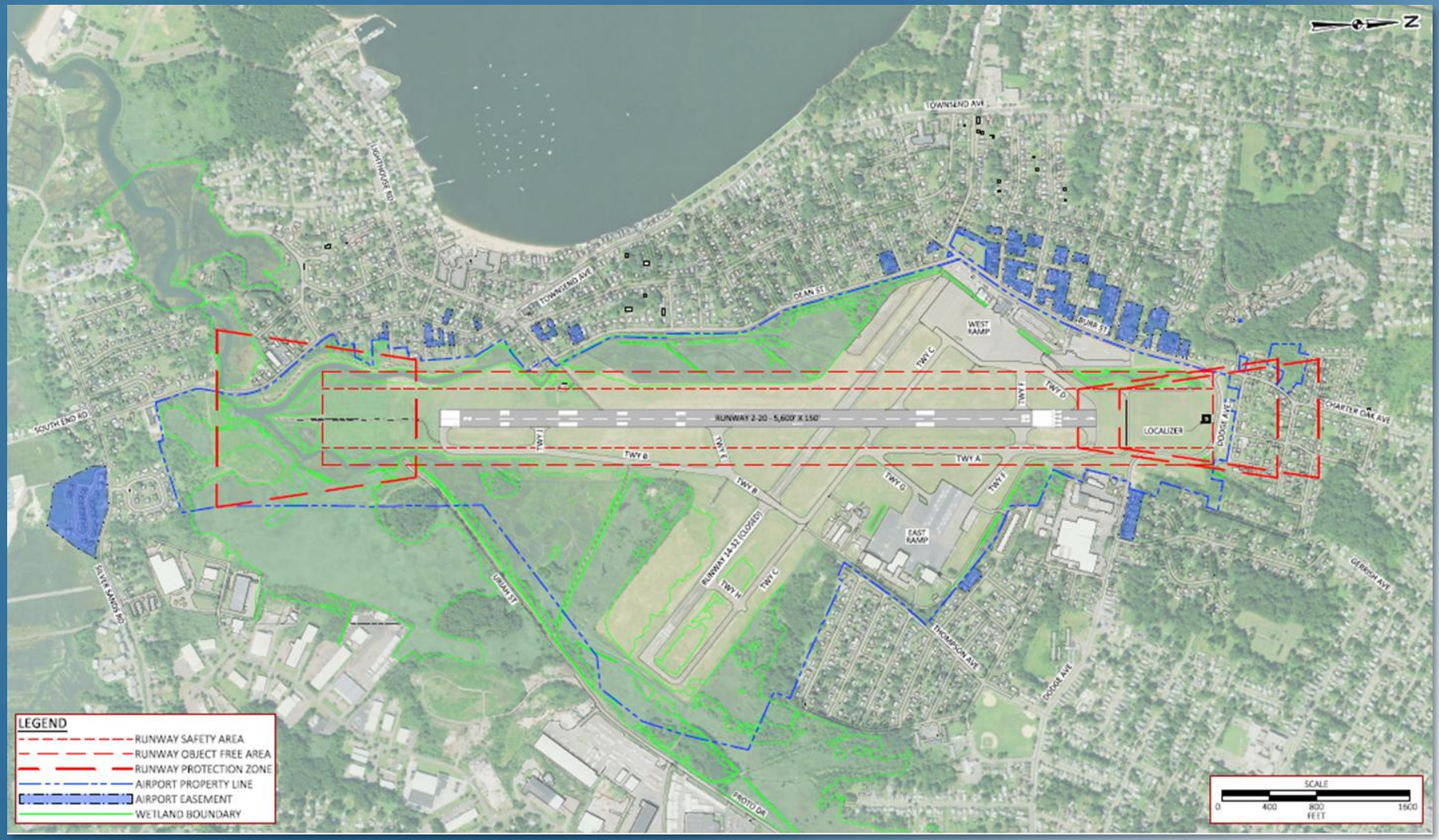
No Build



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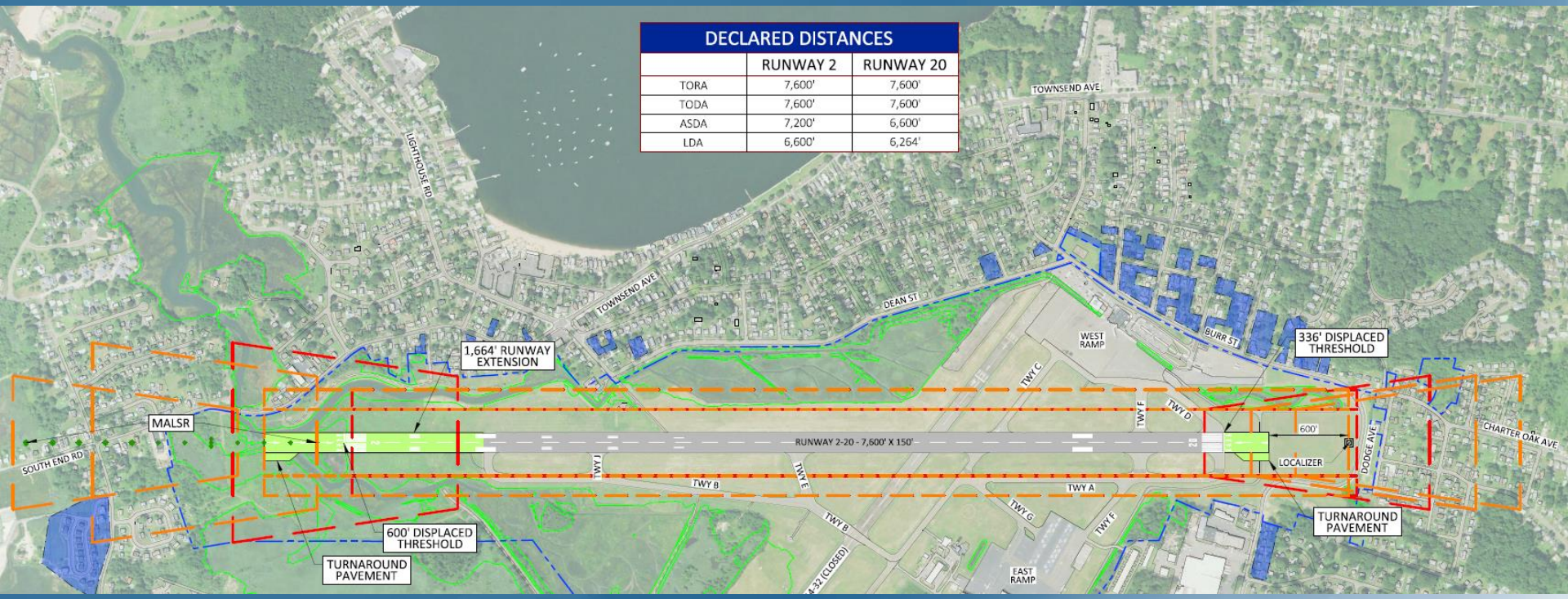
Alternatives Considered and Dismissed

- 7,600-foot Long Runway



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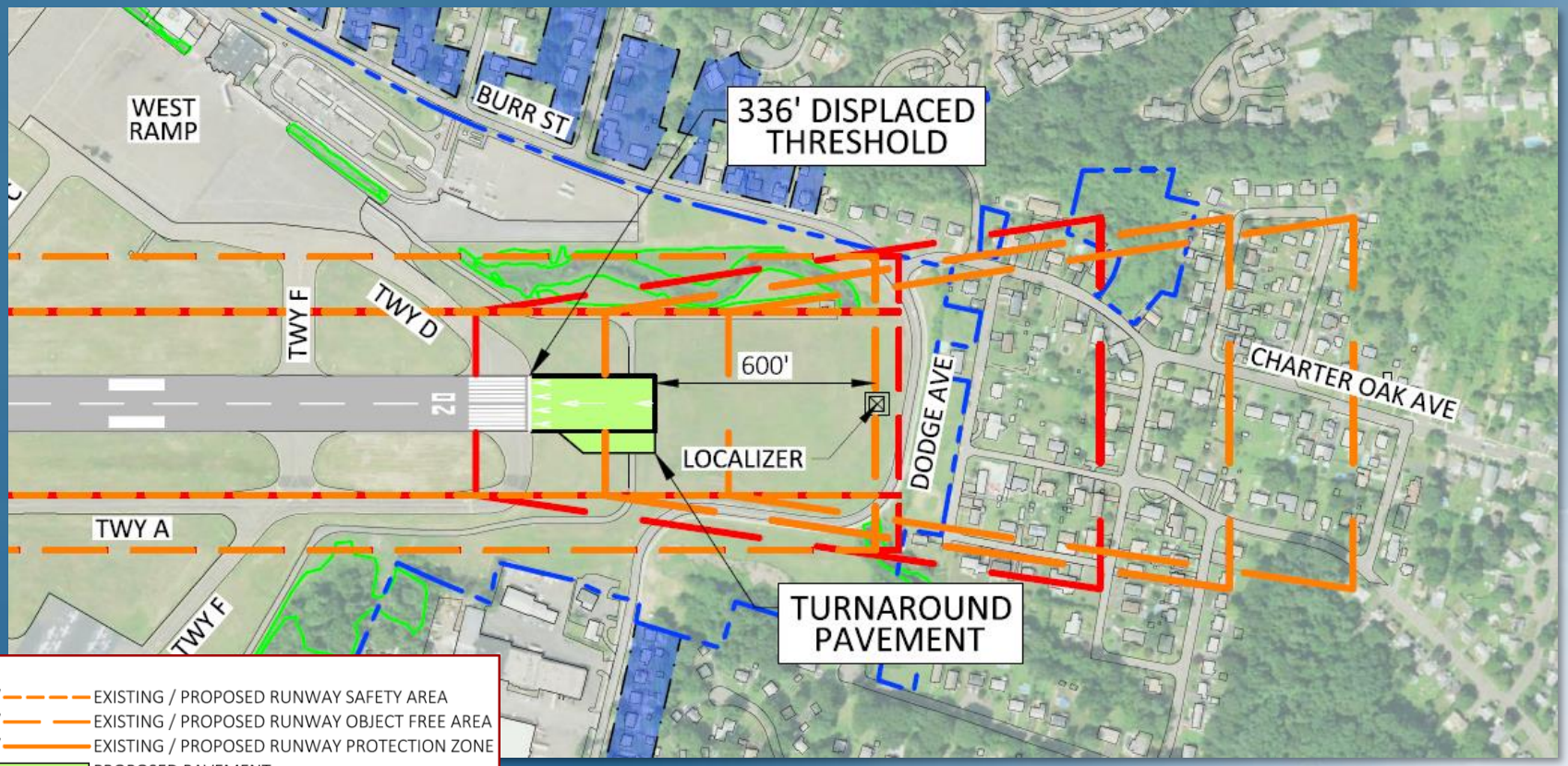
Runway 20 Extension

- 336 Foot Runway Extension
- Additional Turnaround Pavement
- No Impacts to NAVAIDs



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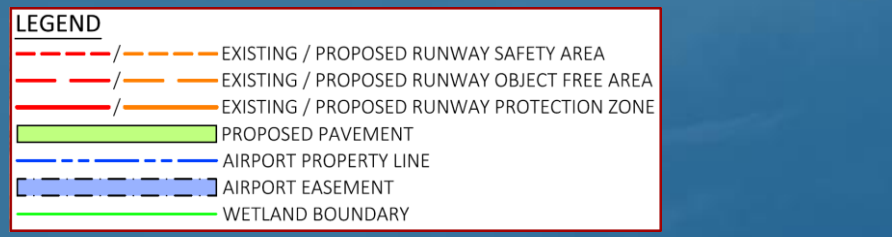
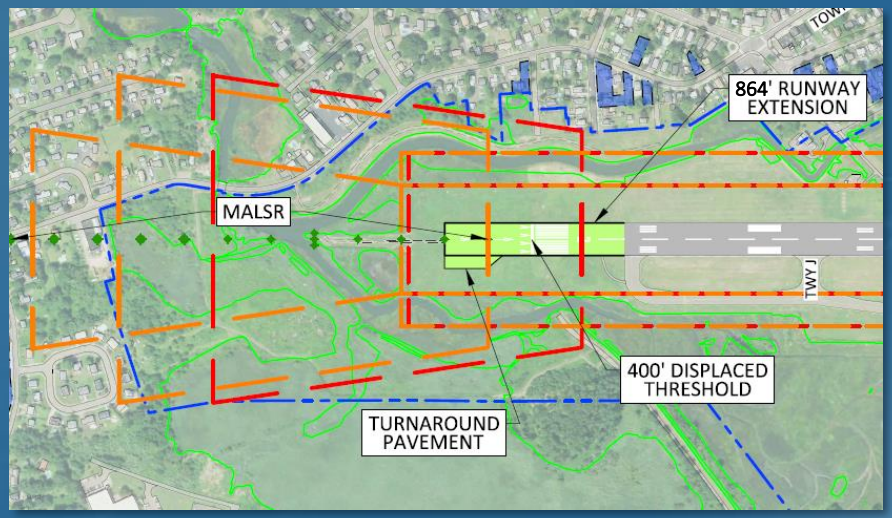
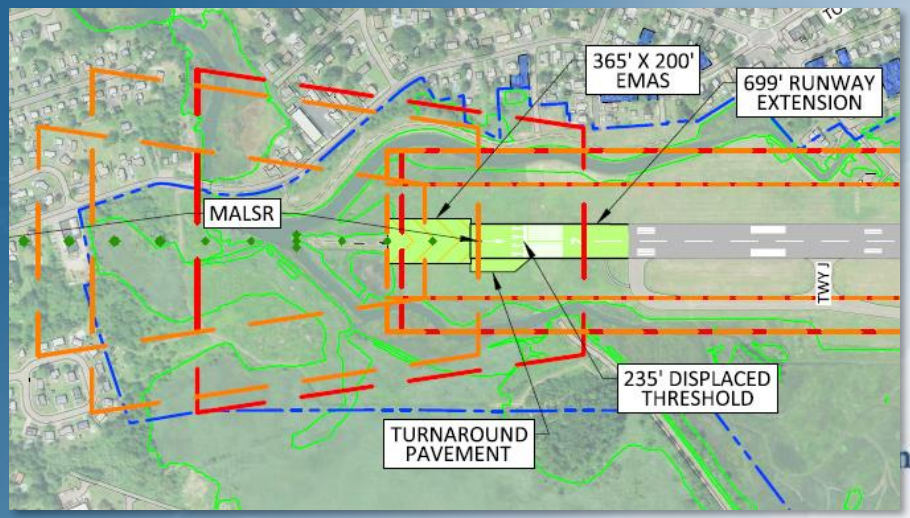
Runway 2 Extension

- 864-Foot Runway Extension
- 699-Foot Runway Extension
- Engineered Materials Arresting System (EMAS)







Combined Runway Alternatives

DECLARED DISTANCES		
	RUNWAY 2	RUNWAY 20
TORA	6,800'	6,800'
TODA	6,800'	6,800'
ASDA	6,400'	6,000'
LDA	6,000'	5,664'

Runway Alternative No EMAS

DECLARED DISTANCES		
	RUNWAY 2	RUNWAY 20
TORA	6,635'	6,635'
TODA	6,635'	6,635'
ASDA	6,235'	6,635'
LDA	6,000'	6,299'

Runway Alternative With EMAS

LEGEND

- PROPOSED PAVEMENT
- TO BE REMOVED
- AIRPORT PROPERTY LINE
- AIRPORT EASEMENT
- WETLAND BOUNDARY

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Airfield Alternative Overview

Item/Facility	No Build	Runway Alternative No EMAS	Runway Alternative with EMAS
Meets FAA Standards	No	Yes	Yes
Meets Facility Requirements	No	Improves Conditions – Does not meet 6,000 LDA/ASDA	Yes
Flexibility	None – is not flexible to the changing fleet	Improves Conditions	Yes
Environmental	None	Low Impacts No Direct Impact to Tuttle Creek	Low Impacts No Direct Impact to Tuttle Creek
Construction Costs (Comparative)	Low/None	Medium	High
Operational Costs	Low	Low	High

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Runway Alternatives Summary

- Critical Runway Lengths are Accelerate Stop Distance Available (ASDA) and Landing Distance Available (LDA)
- Additional Runway Length Improves Operational Reliability Especially During Inclement Weather (e.g. Wet/Winter Conditions)
- Master Plan Focused on Developing Alternatives Within the Existing Runway Safety Area (RSA) Footprint
- 7,600-foot Runway Length Is **NOT** Feasible
- Both Feasible Alternatives Generally Fit Within Footprint
- Final Preferred Alternative May Be Adjusted Based on Feedback
- FAA Will Evaluate Documentation in Master Plan Prior To Approving the Airport Layout Plan (ALP)
- Projects Must be Shown on the ALP to Be Eligible For Funding
- FAA Will Re-Evaluate at Subsequent Funding and Approval Steps

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Taxiway Alternative Overview

Item/Facility	No Build	Full-Length Parallel Taxiway
Meets FAA Standards	No	Yes
Meets Facility Requirements	No	Yes
Flexibility	None	Yes
Environmental	None	High
Costs (Comparative)	None	High

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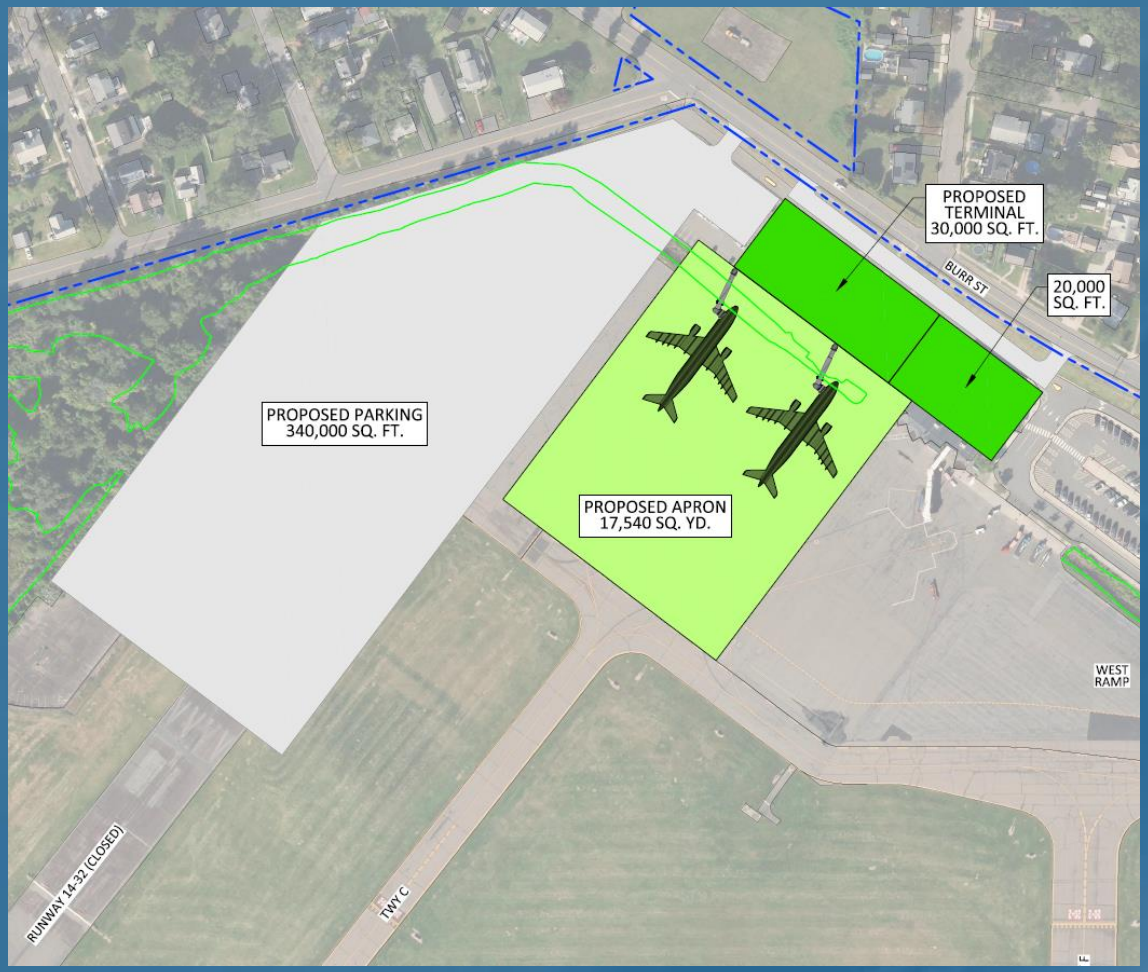
Terminal Alternative 1



LEGEND
- PROPOSED PAVEMENT
- PROPOSED BUILDING
- PROPOSED PARKING
- AIRPORT PROPERTY LINE
- WETLAND BOUNDARY
- A319

Pros:

- Uses Existing Parking Lots and Circulation Roads
- Has Low Environmental Impacts

Cons:

- Does Not Address Access Concerns
- Constructability
- Is Constrained Site – No Flexibility
- Is Not Compatible with Adjacent Land Use
- Requires Aircraft To Cross Active Runway for Runway 2 Departure/Runway 20 Landing
- Requires Fuel Trucks To Cross RSA

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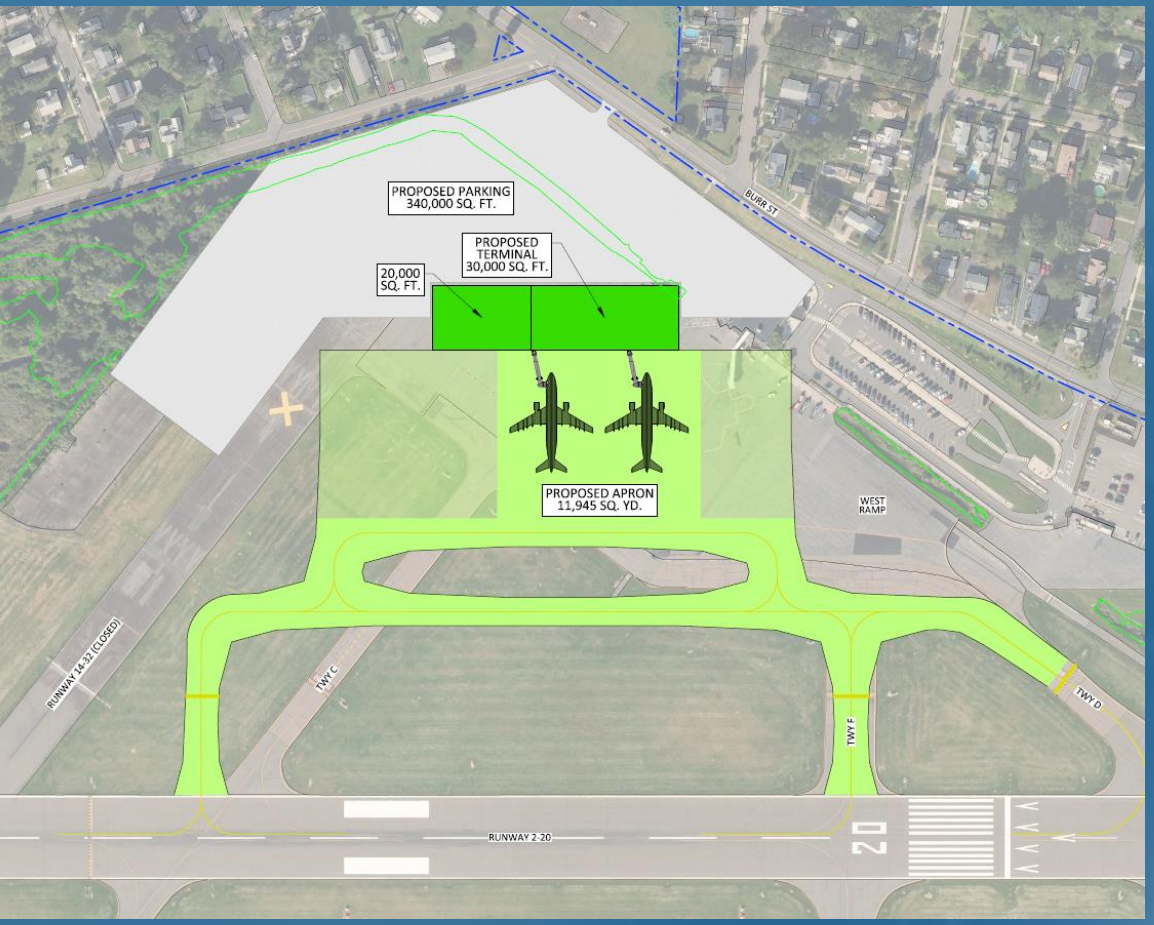
Terminal Alternative 2



LEGEND

- PROPOSED PAVEMENT
- PROPOSED BUILDING
- PROPOSED PARKING
- AIRPORT PROPERTY LINE
- WETLAND BOUNDARY
- A319

Pros:

- Provides Infrastructure Flexibility
- Can Utilize Existing Parking Lots and Circulation Roads
- Has Low Environmental Impacts
- Improves Constructability

Cons:

- Does Not Address Access Concerns
- Is Not Compatible with Adjacent Land Use
- Requires Aircraft To Cross Active Runway for Runway 2 Departure/Runway 20 Landing
- Requires Fuel Trucks To Cross in RSA

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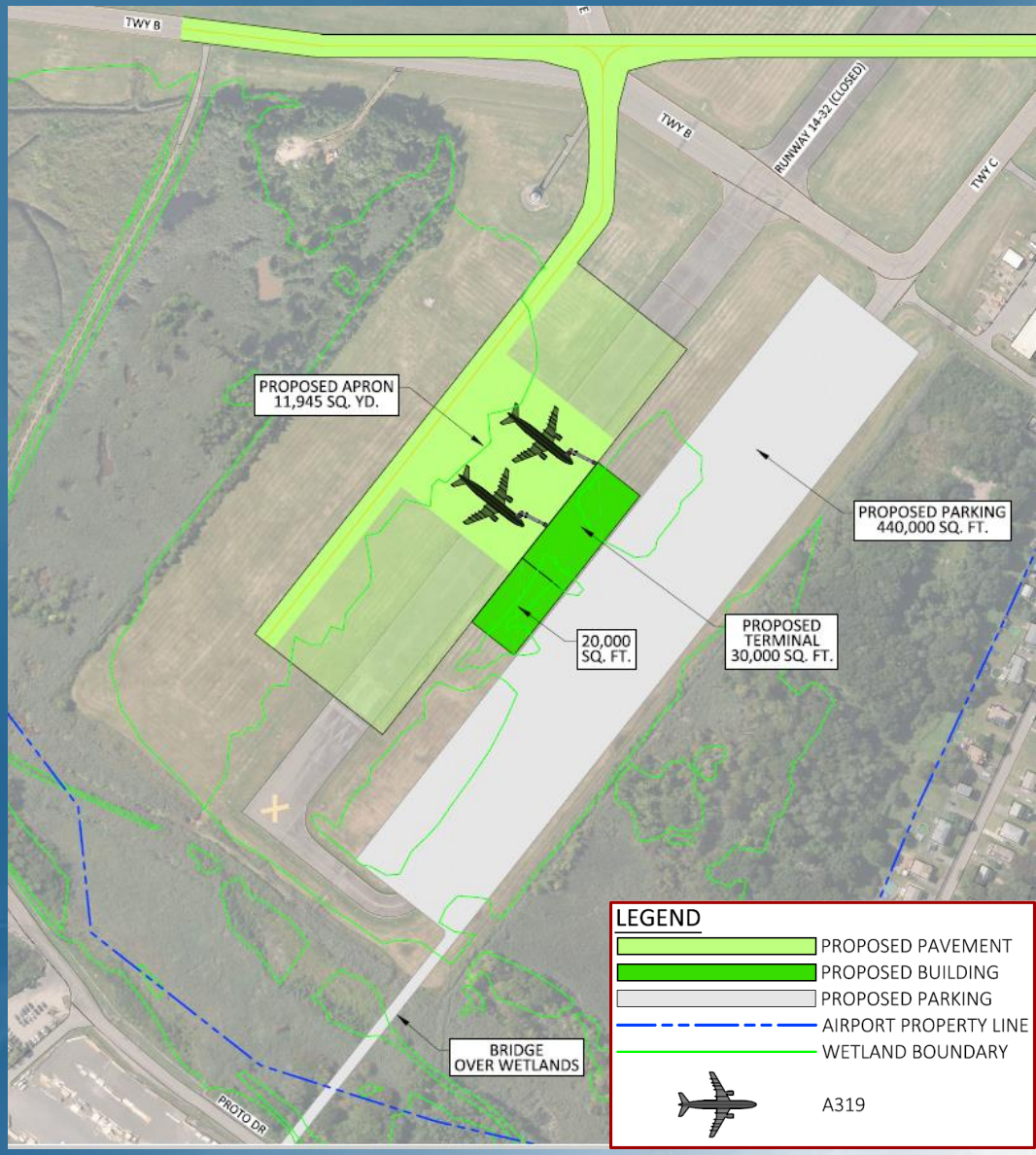
Terminal Alternative 3

Pros:

- Provides Infrastructure Flexibility
- Improves Roadway Access
- Best Constructability
- Is Compatible with Adjacent Land Uses
- Provides Shorter Taxi Route to Runway 2
- Has Close Proximity to Fuel Farm
- Improves Safety by Reducing Runway Crossings
- Terminal Is Closer to ARFF

Cons:

- Has Higher Cost
- Impacts Existing Disturbed Wetlands



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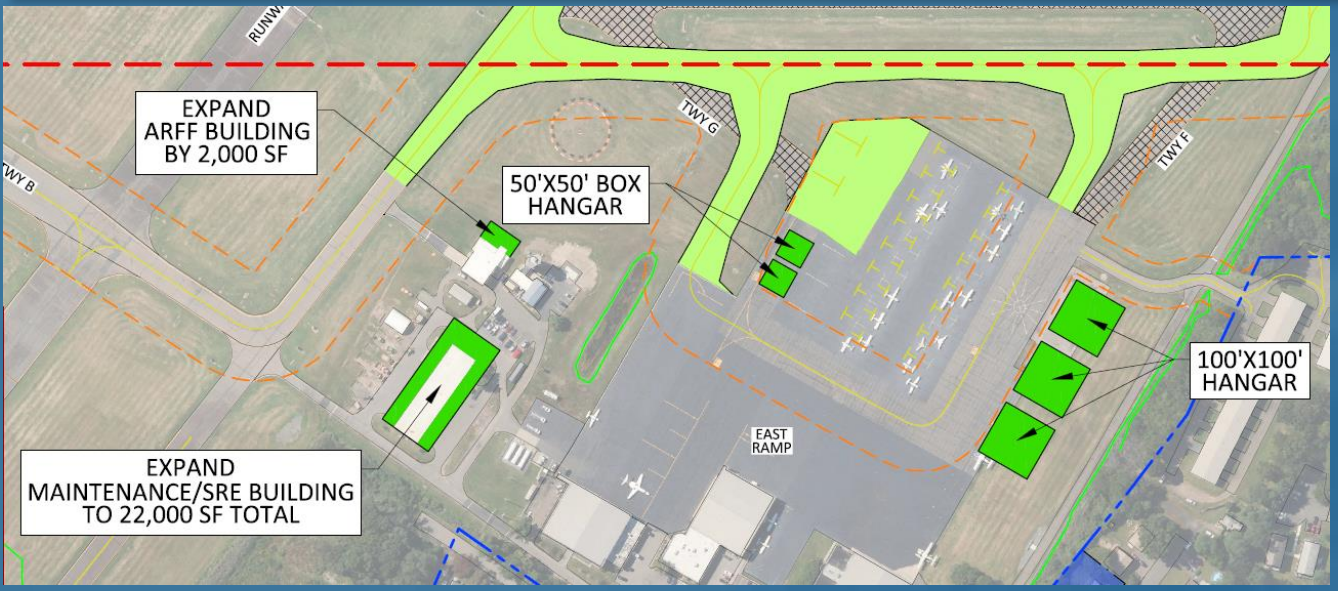
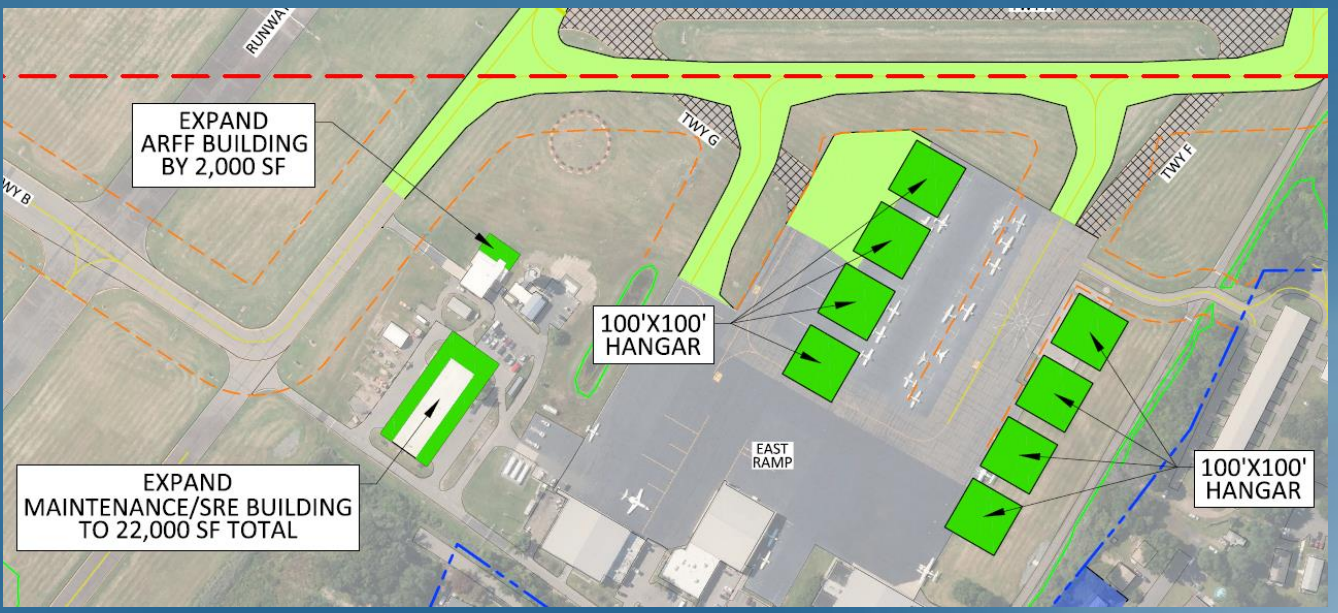
Terminal Alternative Overview

Item/Facility	No Build	Terminal Alt. 1 – Existing Location	Terminal Alt. 2 – West New Terminal	Terminal Alt. 3 – East Side Terminal
Meets FAA Standards	No	No - Runway Crossing; Fuel Truck Crosses RSA	No - Runway Crossing; Fuel Truck Crosses RSA	Yes
Meets Facility Require-ments	No	No – Does not Address Access Concerns	No – Does not Address Access Concerns	Yes
Flexibility	None – Constrained	Low	Medium	High
Community Impacts	Medium – Existing Impacts Will Remain Incompatible Adjacent Land Use	High – Roadway Improvements Incompatible Adjacent Land Use	High – Roadway Improvements Incompatible Adjacent Land Use	Low – New Access
Environ-mental	None	Low	Low	High
Costs	None	Medium	Medium	Higher

General Aviation Alternatives - East





- Meet Facility Requirements
- GA/Tie-down Layout versus more Corporate Layout

LEGEND

- RUNWAY OBJECT FREE AREA
- TAXIWAY OBJECT FREE AREA
- PROPOSED BUILDING
- PROPOSED PAVEMENT
- TO BE REMOVED
- AIRPORT PROPERTY LINE
- AIRPORT EASEMENT
- WETLAND BOUNDARY

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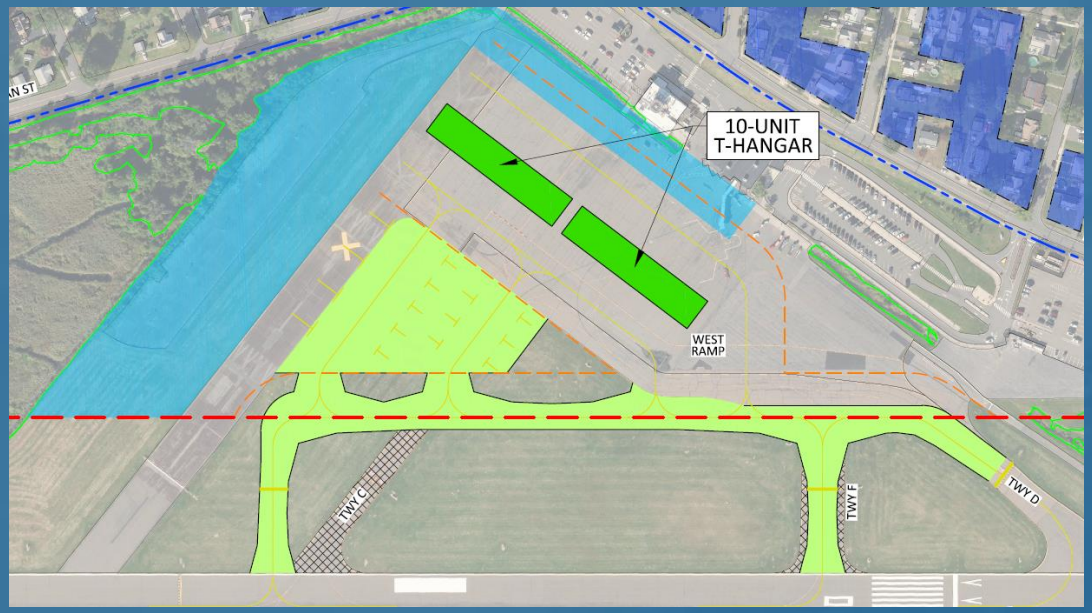
General Aviation Alternatives - West



T-Hangars:

- Meets Facility Requirements
- Moves GA West, Allows for Separation of Corporate and GA
- Wetland Expansion: 7 acres

Corporate/Business Alternative:

- Meets Facility Requirements
- Wetland Expansion: 7 acres

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General Aviation Alternative Overview

Item/Facility	No Build	East Ramp – GA	East Ramp – Corporate	West Ramp – GA	West Ramp - Corporate
Meets FAA Standards	No	Yes	Yes	Yes (including ARFF and SRE Expansion)	Yes (including ARFF and SRE Expansion)
Meets Facility Require-ments	No	Yes	Yes – most current tie-downs in hangars	Yes – GA would move West, East Corporate	Yes
Flexibility	No	Yes	Yes	Improved	Yes
Environ-mental	Low	Low	Low	Provides Environmental Mitigation Opportunities	Provides Environmental Mitigation Opportunities
Costs	None	Medium	Medium	High	Low

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Alternative Discussion

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Next Steps

- Preferred Alternative
  - Final Determination Will be Shown on the Airport Layout Plan (ALP)
- Airport Layout Plan – FAA Approval
  - Projects Must Be Shown on the ALP to Be Eligible For Funding
  - Approval of the ALP Will Be Conditioned Upon Completion of the National Environmental Policy Act (NEPA)
  - Design and Construction is Subject to Funding Availability

After the Master Plan

- National Environmental Policy Act (NEPA) process
  - Project Purpose and Need is the Foundation of NEPA Documents
  - FAA Will Carefully Review the Purpose and Need
- Final Design and Permitting
- Begin Implementation

Conclusion / Questions

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