

# Williston Basin International Airport Master Plan Stakeholder Advisory Committee Airside Facility Recommendations Meeting

October 19, 2022

Presented by:

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SEH

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Williston Basin International Airport



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## Airside Facility Recommendations Agenda

- Welcome & Introductions
- Master Plan Progress Update
- Cargo & General Aviation Forecast Overview
- Airside Facility Recommendations & Alternatives
- Next Steps
- Discussion/Questions



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## Project Consultant Team



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## Welcome & Introductions

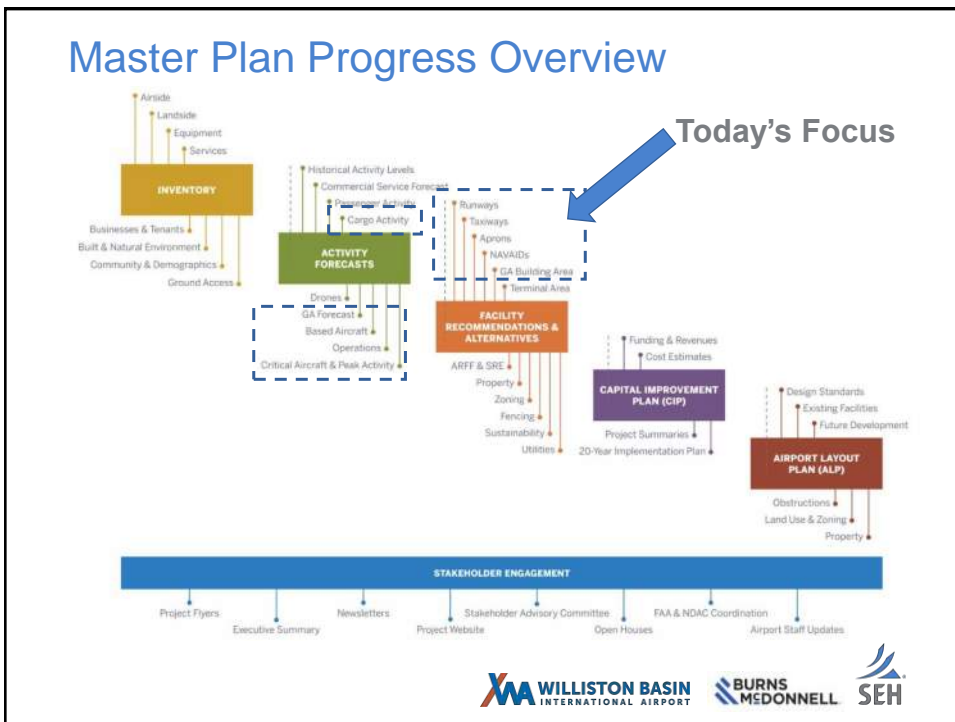
- Name
- Organization
- Role



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## Cargo Forecasts

- XWA served by:
  - Federal Express (operated by Corporate Air)
  - United Parcel Service (operated by Encore Air Cargo)

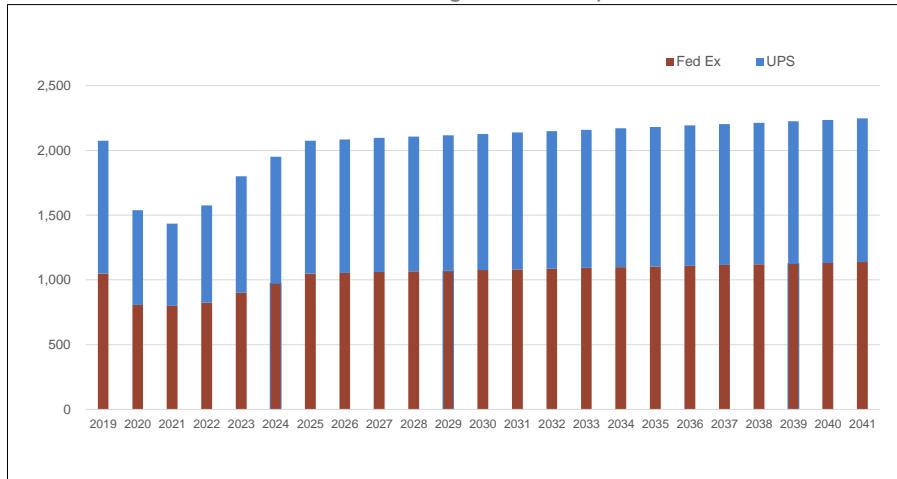


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## Cargo Forecasts

XWA Forecasted Cargo Aircraft Operations



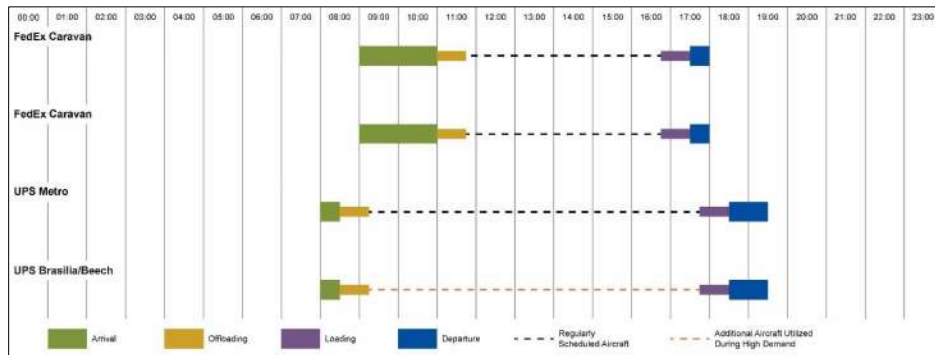
Source: Landrum and Brown Analysis



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## Cargo Activity

Typical Air Cargo Schedule (2022)



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## Airport Uses



AIRLINE



AIR AMBULANCE



AIRCRAFT RENTAL



AIR CARGO



AIR CHARTER



SURVEYING



AG SPRAY



FLIGHT INSTRUCTION

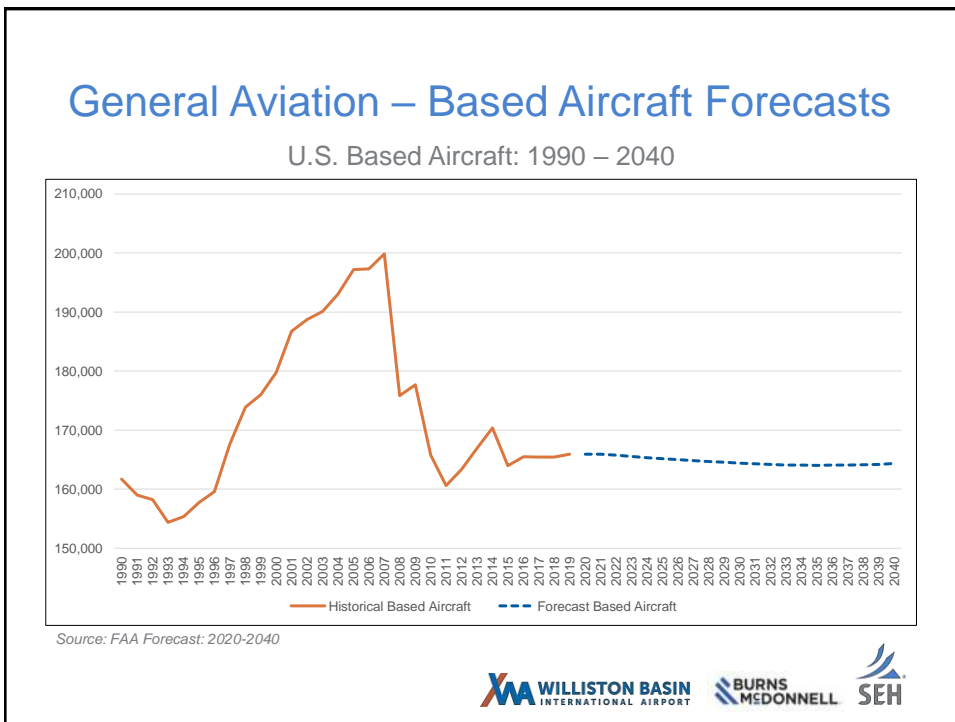


CAR RENTALS





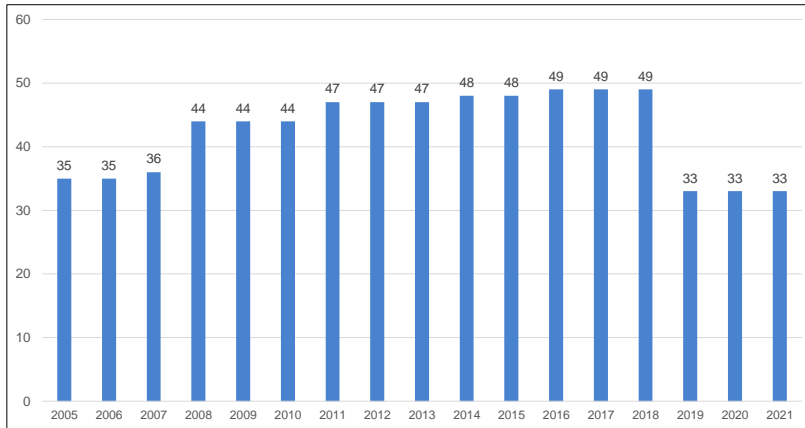
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## General Aviation – Based Aircraft Forecasts

Williston Historic Based Aircraft (ISN & XWA)



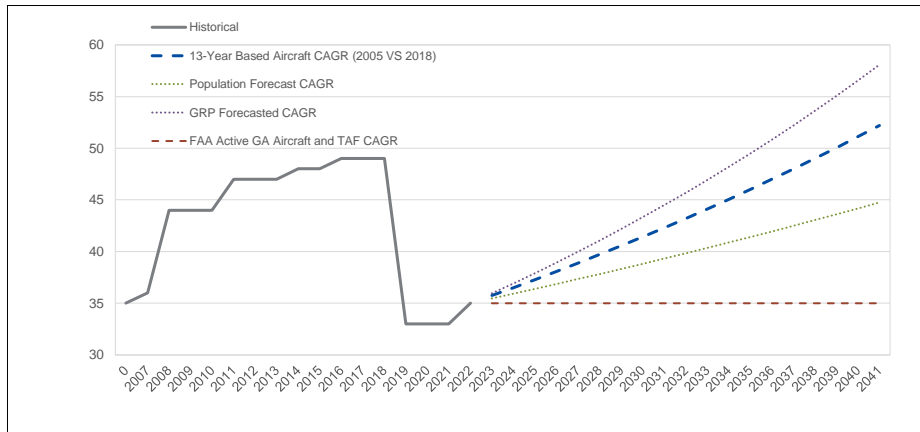
Source: FAA Terminal Area Forecast (May 2021), NDAC Aircraft Registration Records



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## General Aviation – Based Aircraft Forecasts

XWA Based Aircraft Forecast Methods



Note: Chart includes growth built off the 2022 based aircraft count of 35

Source: Landrum and Brown Analysis; FAA TAF



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## General Aviation – Based Aircraft Forecasts

Based Aircraft Forecast at the Airport

Metric	2019	2026	2031	2041	CAGR
Total Based Aircraft	33	37	39	45	1.3%

Source: Landrum & Brown Analysis

Mix of Based Aircraft Forecast at the Airport

Year	Piston Single Engine	Turbine Single Engine	Piston Multi Engine	Turbine Multi Engine	Jet	Rotorcraft	Total
2019 (Existing baseline)	25	2	4	0	0	2	33
2026	27	2	4	1	0	3	37
2031	29	2	4	0	1	3	39
2041	36	2	3	0	1	3	45

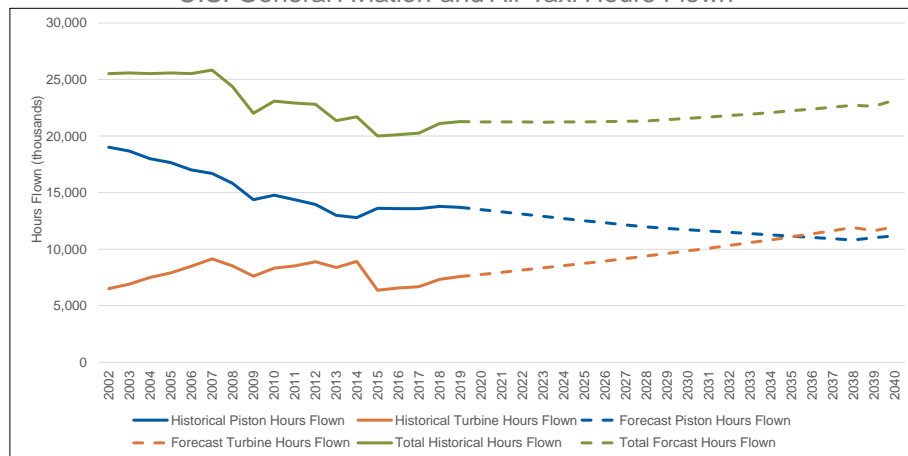
Source: FAA Report 5010, Landrum and Brown Analysis



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## General Aviation – Operations Forecasts

U.S. General Aviation and Air Taxi Hours Flown



Source: FAA Aerospace Forecast (2020-2040)

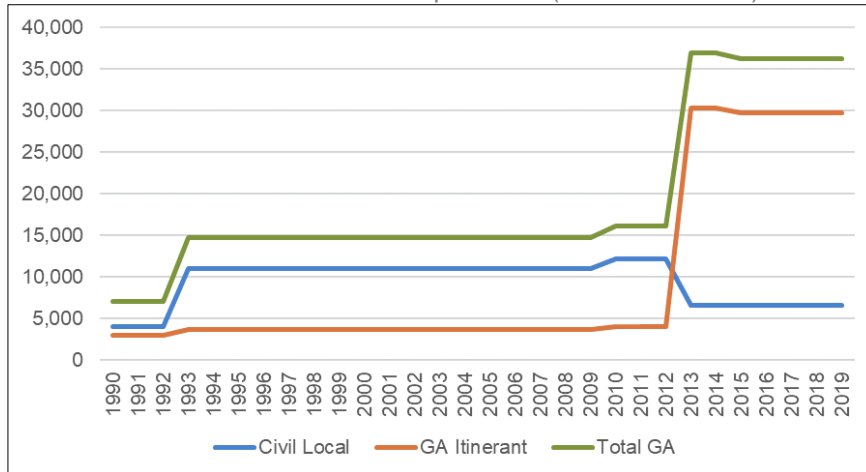


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## General Aviation – Operations Forecasts

Williston General Aviation Operations (Itinerant & Local)



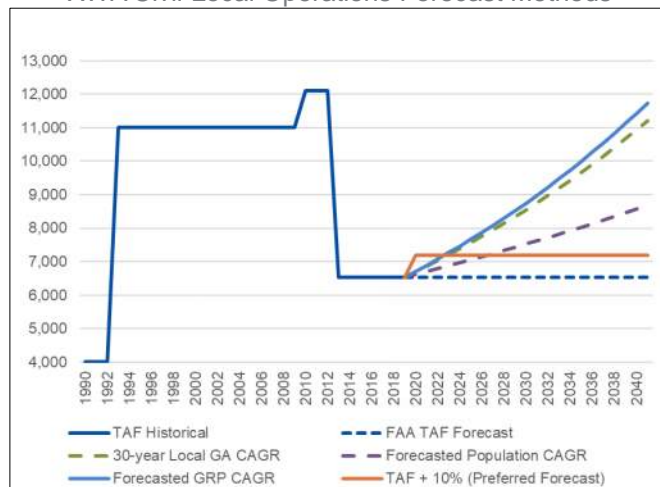
Source: XWA May 2021 TAF



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## General Aviation – Operations Forecasts

XWA Civil Local Operations Forecast Methods



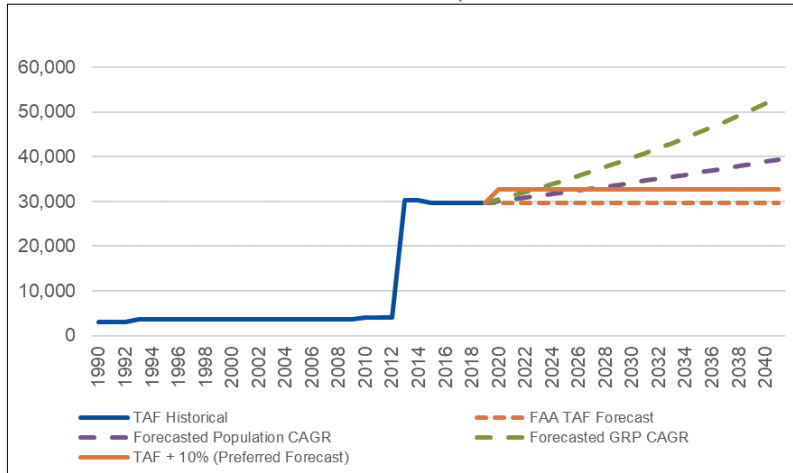
Source: FAA Terminal Area Forecast, Landrum and Brown Analysis



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## General Aviation – Operations Forecasts

Williston General Aviation Itinerant Operations Forecast Methods



Source: FAA Terminal Area Forecast, Landrum and Brown Analysis



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## General Aviation – Operations Forecasts

General Aviation Forecast Summary

Metric	2019	2026	2031	2041	CAGR
Local Operations	6,533	7,186	7,186	7,186	0.5%
Itinerant Operations	29,646	32,611	32,611	32,611	0.5%
<b>Total Operations</b>	<b>36,179</b>	<b>39,797</b>	<b>39,797</b>	<b>39,797</b>	<b>0.5%</b>
Local Share	18%	18%	18%	18%	
Itinerant Share	82%	82%	82%	82%	

Source: Landrum and Brown Analysis



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## Critical Design Aircraft

Critical Design Aircraft (overall airport)

Period	Aircraft	MTOW	ARC	Operations			
				2019	2026	2031	2041
Existing	CRJ	53,000	C-II	4,046	2,190	1,460	-
Mid & Long-Term	E-175	85,517	C-III	-	1,643	2,373	4,015

Note: MTOW = Maximum Takeoff Weight (pounds), ARC = FAA Airport Reference Code, TDG = FAA Taxiway Design Group

Source: Landrum and Brown Analysis



CRJ-200  
C-II



E-175  
C-III



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## Runway Design Code

Runway 14/32:  
Existing Design Standards D-III  
Existing AIP Eligibility C-II  
Future AIP Eligibility C-III



Runway 4/22:  
Existing Design Standards A-II/B-II  
Existing AIP Eligibility A-I/B-I



**What does this mean to me: The runway can accommodate larger aircraft.**



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# Runway Facilities



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## Runway 14/32

- **Runway Length**
  - Existing critical aircraft requires 6,903'
  - Runway extension to 8,500'
- **Runway Width**
  - Existing width 150'
  - Design standards are 100'
- **Runway Shoulders**
  - Paved shoulders recommended for ADG III runways
- **Pavement Strength**
  - Strength exceeds needs of the critical aircraft and support the larger aircraft that visit XWA
- **No additional markings, signs, navigational aids**

*What does this mean to me: Long-term, funding for runway projects may include additional local share to maintain the larger design standards if the larger aircraft aren't operating at XWA.*



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## Runway 4/22

- **Runway Length**
  - Existing critical aircraft requires 3,900'
- **Runway Width**
  - Existing width 75'
  - Design standards are 60'
- **Pavement Strength**
  - Strength meets the needs of the critical aircraft
- **No additional markings, signs, navigational aids**



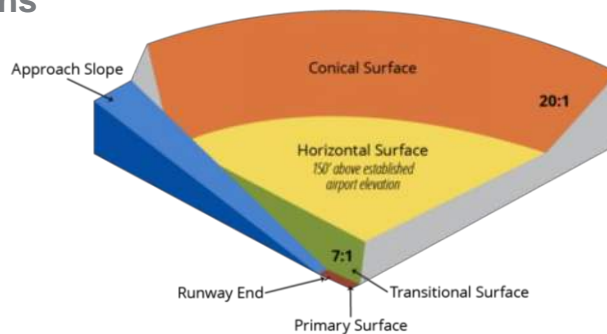
**What does this mean to me:** Long-term, funding for runway projects may include additional local share to maintain the larger design standards.



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## Instrument Approach Procedures & Obstructions

- Existing Approach Procedures are clear of obstructions



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# Airport Safety Zoning



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# Taxiway Network

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## Taxiway Network



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## Taxiway Network

- Taxiway Design Group
  - Influences pavement width and fillets
  - All taxiways have Medium Intensity Taxiway Lights
- Connector Taxiway A
  - 20' pavement shoulders recommended for taxiways serving ADG III aircraft.



**What does this mean to me:** Paved shoulders can help with snow removal minimizing maintenance costs in the spring.



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## Taxiway Network

- Taxiway C – Direct Access
  - Design Standards Change
    - Minimum standards of a 75-degree to 90-degree turn are not currently met from Taxiway C and Taxiway A3 (the existing turn angle is 20 degrees)



***What does this mean to me:*** Additional costs to adjust the connecting taxiway may be required when the taxiways are reconstructed.

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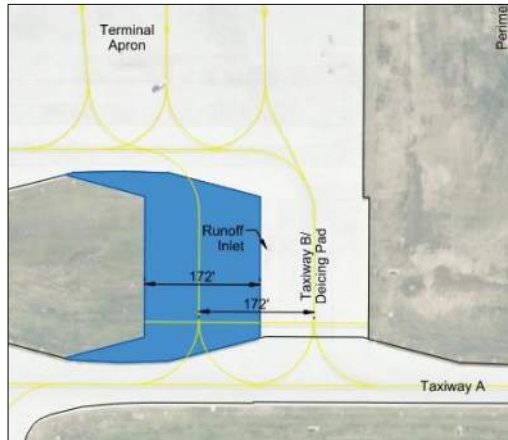
## Taxiway Network

- Taxiway D
  - Recommended partial parallel taxiway on the north side of Runway 4/22 – limit the need for runway crossings
  - Protect for full parallel taxiway

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## Taxiway Network

- Taxiway B and deicing pad expansion



*What does this mean to me: The larger deicing area will help alleviate congestion and reduce delay times.*



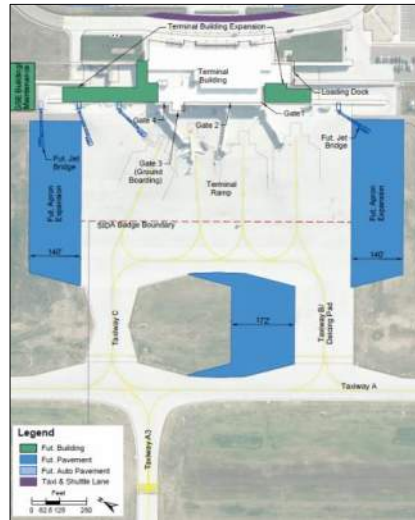
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## Aprons & Aircraft Parking



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## Commercial Service Apron



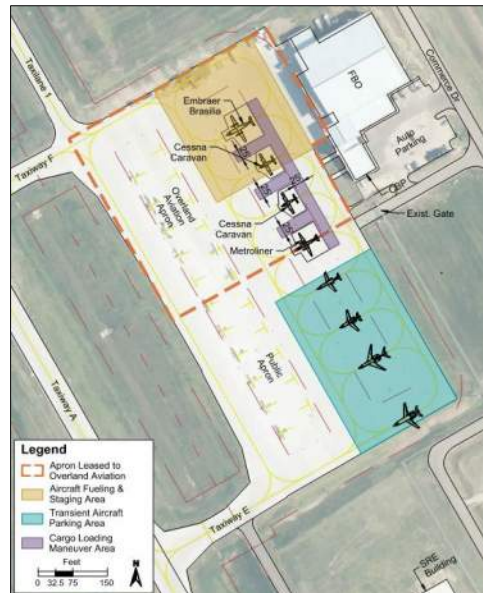
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## Cargo Operations (Existing)

- Existing congestion
- Overlap of operations
- Public parking constraints



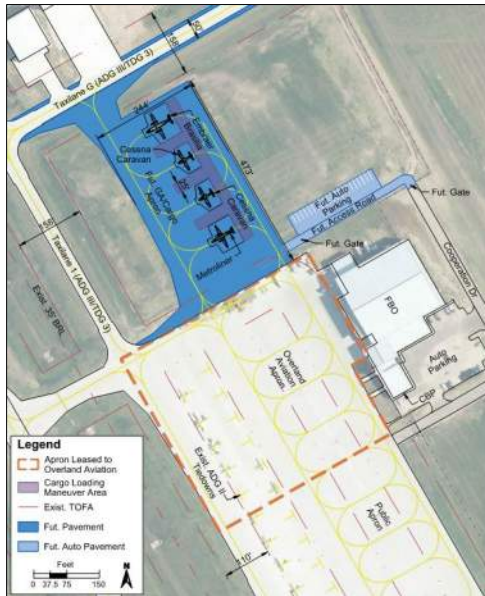
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# Cargo Apron Future

*What does this mean to me: safe maneuvering of cargo trucks around the parked aircraft and personnel servicing the aircraft.*



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# Cargo/Commercial Development – Ultimate



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## General Aviation Apron

- Tiedown Demand
  - Due to based aircraft parked on the apron, there is a need for 4 – 5 additional tiedown locations for ADG I or ADG II aircraft in the near-term.



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## Hangar Needs & Self-Service Fueling



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## Hangar Needs

Item	Forecast			
	2019	2026	2031	2041
Based Aircraft	33	37	39	45
Existing Hangar Capacity	5	5	5	5
Estimated Hangar Demand	25	28	30	34
<b>Estimated Hangar Surplus / Shortage</b>	<b>-20</b>	<b>-23</b>	<b>-25</b>	<b>-29</b>

Source: SEH

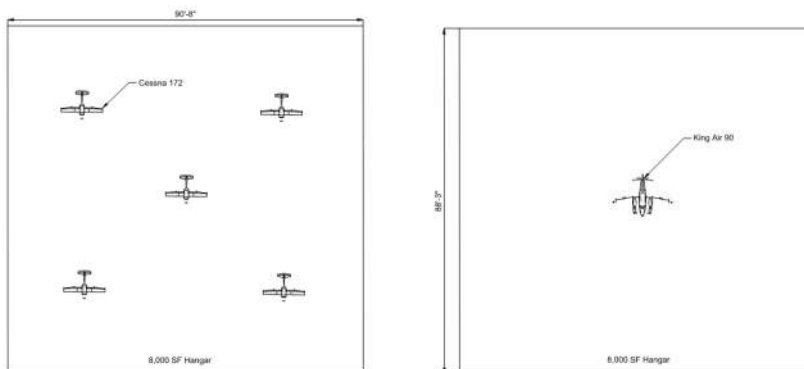
- Consideration for:
  - City owned T-hangars
  - Corporate hangar expansion
  - FBO expansion

*What does this mean to me: Additional revenue for the airport and increased based aircraft. The airport can accommodate higher than forecasted demand.*



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## Hangar Needs



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# Hangar Types

Box Hangar



Terminal Building & FBO



T-hangar with Large End Bay



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# Hangar Types



Multi-bay Ranch Hangar with Different Door Heights

Multi-plane Storage Hangar

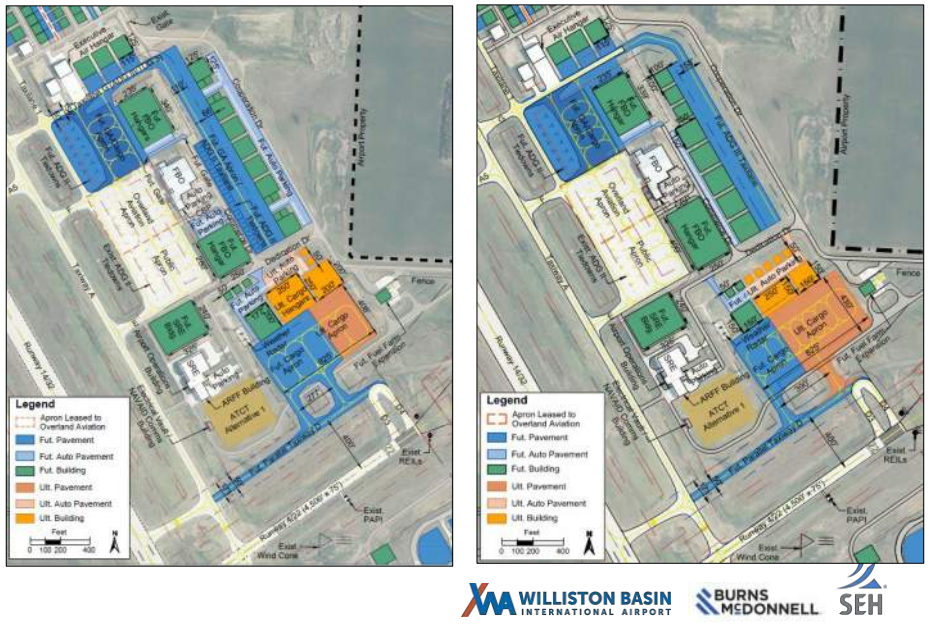


S-Hangar Design for Narrow Taxilanes



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## Corporate Hangar Needs



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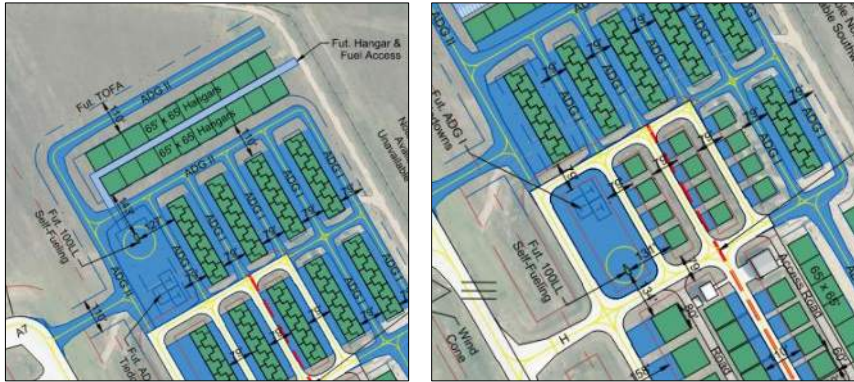
## General Aviation Hangar Needs



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## Self-Service Fuel System



*What does this mean to me: Additional revenue for the airport and less congestion on the general aviation apron.*



## Air Traffic Control Tower



## Remote Air Traffic Control Tower Alternative

- A remote tower uses a variety of sensors, visual, infrared, track-based (radar), etc. to provide an air traffic controller, located in a remote facility, with a comprehensive picture of the airport surface and local airspace.



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## Remote Air Traffic Control Tower Considerations

- FAA is evaluating this technology to assess its suitability for use in the National Airspace System.
- Two remote tower systems are under evaluation in US:
  - [Northern Colorado Regional Airport \(FNL\)](#) – Loveland – Ft. Collins, CO
    - Public-private partnership
    - ~95,000 annual operations, 270 based aircraft
    - C-III, diverse mix of aircraft
  - Leesburg Executive Airport (JYO) – Leesburg, VA
    - Public-private partnership
    - ~115,000 annual operations, 250 based aircraft
- FAA Reauthorization Act of 2018 established the Remote Tower Program
  - Once remote towers are certified – potential to make AIP funds available for facility
- The FAA indicated that, if and when remote towers are certified, they would likely be part of the Federal Contract Tower Program



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## Benefits and Challenges with Remote Towers

### Benefits of Remote Towers

- Lower capital and operations and maintenance costs
- Shortened timeline for site design/implementation
- Reduced environmental study
- Smaller footprint for more siting flexibility
- Potential for remote and consolidated tower operations

### Potential Challenges of Remote Towers

- Funding
- Pilot program priority currently given to existing federal contract tower airports.
- New technology – FAA type certification is not complete
- Uncertain timeline
- Security
- Public perceptions



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## Test Site - Fort Collins Airport



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## Traditional Air Traffic Control Tower Siting

- Limit impacts on instrument approach procedures
- Limit impacts on communication, navigation and surveillance equipment
- Visibility performance
  - Unobstructed view.
  - Controller should be able to detect/identify an object on all airport surfaces 95.5% of the time.
  - The minimum line of sight angle of incidence should be equal to or greater than 0.80 degrees.
- Operational requirement
  - Primary view should face north. Alternatively, east, west and then south.
  - Where snow often accumulates in the northern hemisphere, a southern orientation should be avoided.
  - Visibility of all airport surface areas should be considered. Priority should be given to taxiways in non-movement areas.
- Economic considerations – consider tower height, land use and existing infrastructure

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## Air Traffic Control Tower



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# Air Traffic Control Tower Locations



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# Air Traffic Control Tower Locations

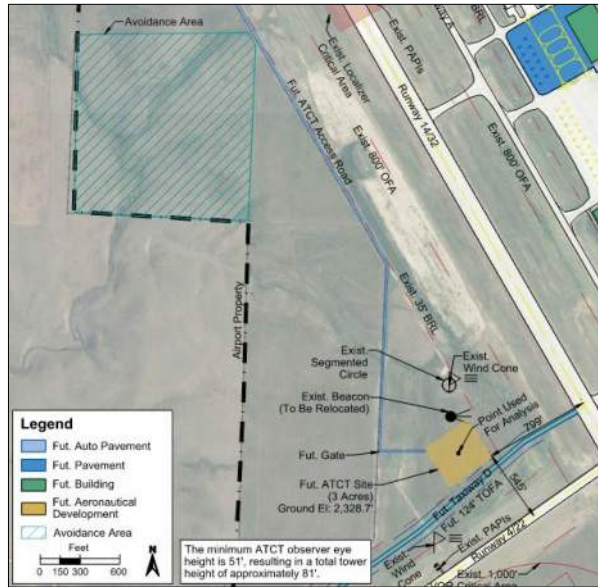


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## Air Traffic Control Tower Locations



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## Air Traffic Control Tower Process



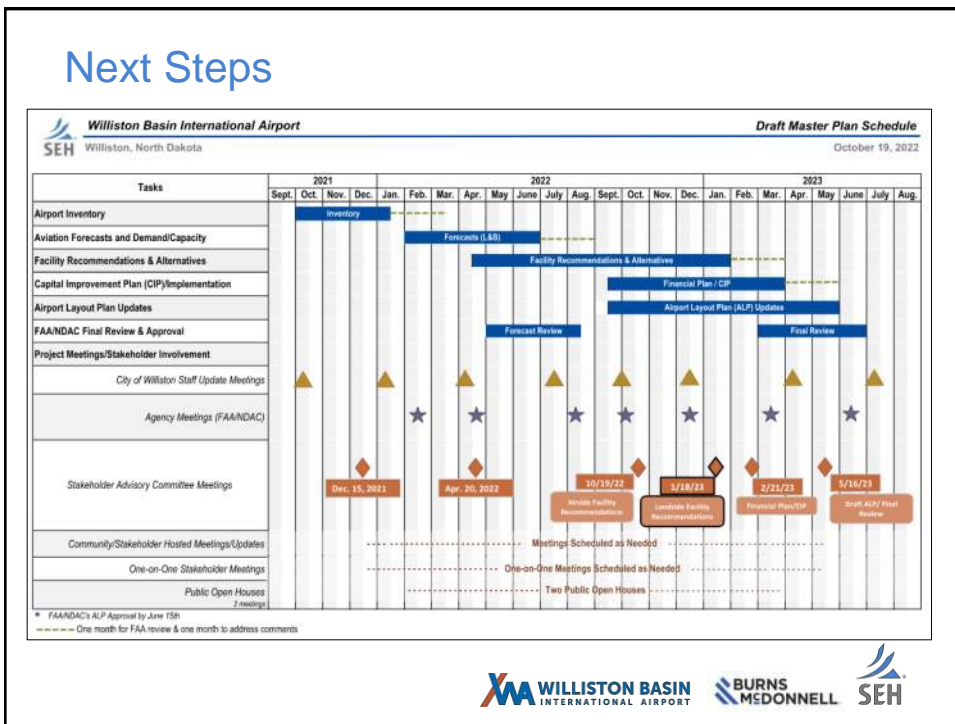
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What's next?



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## Master Plan Next Steps

### Project Team

- Submit Forecasts for FAA & NDAC Approval
- Landside Facility Recommendations & Alternatives

### SAC

- Meeting #4:
  - Propose January 18, 2023
    - 9:00 a.m. – 10:30 a.m. at the airport
  - Topics
    - Landside Facility Recommendations & Alternatives

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## Questions and Discussion

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Thank you!

