

Core Community Goals for the Pitkin County-Aspen Airport Resolution 105-2020

1. Safety in the air and on the ground
2. Reduce greenhouse gas and other pollutant emissions by at least 30%
3. Manage the growth of airline enplanements to be consistent with community growth management plans with input and assistance from the Airport Advisory Board to attain the core community goals for the Pitkin County-Aspen Airport. *
4. Reduce noise by at least 30%

*Manage the growth of airline enplanements to be consistent with approximately 0.8% growth per year

AAB Role and Responsibility

- **Bylaws Section 5.**
 - Principle Role - The recommendations of the Board will be utilized by the BOCC to develop policy, positions, legislation, programs, implement BOCC Resolution 105-2020 and other actions related to the Aspen/Pitkin County Airport based on current or future changing conditions.
- **Recommendation #12 – Fleet Mix Studies**
 - **Charge the Airport Advisory Board to evaluate the success of the negotiations and/or the outcome of update fleet mix studies and make an alternate recommendation if necessary.**

AAB Role and Responsibility

- **Leading up to Today**

- During the Forecast/Fleet Mix development. we approached the FAA with Common Ground Goals:
 - 0.8% enplanement growth rate and A220-100 as Design Aircraft.
- John Bauer saw this as a “Constrained” forecast.
- We have developed this fleet mix/forecast based on those conversations.
- Until the forecast is submitted and approved by the FAA the ALP process can not move forward.

- **Today**

- Present the forecast/fleet mix summary that will also be presented to the BoCC.
- Hand out the full report that backs up the summary slides to AAB and will do the same with the BoCC.

Note: We know alterations that lower the growth rate or fleet mix forecast will not accepted by the FAA for approval.

- **Task at Hand**

- AAB will evaluate the success of the negotiations
- See how this compares to Recommendation #12
- Ask questions as we go along

- **AAB Direction Needed**

- Discuss
- Take public comment
- Take a vote on recommending this document to go on to the BoCC for action
- BoCC will follow resolution process
 - Work Session
 - Regular Meeting – Resolution with Public Comment
 - Submit to FAA for review and approval

Common Ground Recommendations

#12: Replace the current ADGIII Airport Layout Plan with an improved ADGIII Airport Layout Plan that accommodates aircraft that meet community goals

- ✓ Commission an updated fleet mix study after allowing airline industry to recalibrate after the disruptions caused by the COVID 19 pandemic
- ✓ Negotiate with airlines and FAA to achieve agreements with the county that ASE will be served by aircraft with the following characteristics:
 - ✓ Greenhouse gas and other emissions that are significantly lower than the CRJ-700
 - ✓ Quieter than the CRJ-700
 - Weight limit of 140,000 (MTOW A220-100: 139,000 lb.)
(MTOW A220-300: 156,300 lb.)
 - Seat limitation of no more than 100-120 passengers (A220-100: 109 seats)
(A220-300: 130 seats)
 - ✓ Retain and strengthen the voluntary noise restrictions
 - ✓ Separate the runway from the taxiway by 400' between centerlines
 - ✓ Widen the runway to 150'

DELTA CRJ700'S VERSUS E175LR'S



- Capacity: 69 seats (9F / 60Y)
- Noise – EPNLdB:
 - Lateral/Full-Power: 89.5
 - Approach: 92.6
 - Flyover (departure): 82.4
- Emissions – NOx Total per PAX: 0.60



- Capacity: 70 (12F / 58Y)
- Noise – EPNLdB:
 - Lateral/Full-Power: 92.0 ↑
 - Approach: 94.5 ↑
 - Flyover (departure): 83.2 ↑
- Emissions – NOx Total per PAX: 0.57 ↓

DELTA CRJ700'S VERSUS & A220-100 (IDEAL AIRCRAFT)



- Capacity: 69 seats (9F / 60Y)
- Noise – EPNLdB:
 - Lateral/Full-Power: 89.5
 - Approach: 92.6
 - Flyover (departure): 82.4
- Emissions – NOx Total per PAX: 0.60



- Capacity: 109 seats (12F / 97 Y)
- Noise – EPNLdB:
 - Lateral/Full-Power: 88.0 ↓
 - Approach: 91.5 ↓
 - Flyover (departure): 78.8 ↓
- Emissions – NOx Total per PAX: 0.40 ↓

DELTA CRJ700'S VERSUS A220-300



- Capacity: Seats 69 (9F / 60Y)
- Noise – EPNLdB:
 - Lateral/Full-Power: 89.5
 - Approach: 92.6
 - Flyover (departure): 82.4
- Emissions – NOx Total per PAX: 0.60



- Capacity: **Seats 130** (12F / 118 Y)
- Noise – EPNLdB:
 - Lateral/Full-Power: 87.5 ↓
 - Approach: 92.4 ↓
 - Flyover (departure): 80.3 ↓
- Emissions – NOx Total per PAX: 0.58 ↓



AIRPORT ADVISORY BOARD MEETING

ALP UPDATE AVIATION DEMAND FORECAST

ASPEN/PITKIN COUNTY AIRPORT

April 20, 2023



ASPEN/PITKIN COUNTY AIRPORT



AGENDA

- ALP Update Project Background
- Purpose and Need for Aviation Forecast
- FAA Forecast Requirements
- Overview of Approach and Methodologies
- Forecast Results
 - Enplaned Passengers
 - Aircraft Operations
 - Aircraft Fleet Mix
 - Peak Period Forecast
- Next Steps

ALP UPDATE PROJECT BACKGROUND

- For more than a decade, the FAA and Pitkin County have focused on eliminating ASE's “non-standard” airfield conditions
- Original Plan
 - Shift the runway 80 feet to the west/widen and strengthen the runway/relocate navigational aids and runway/taxiway lighting/redevelop terminal
 - County faced a decision on the proposed airfield/terminal improvements upon approval of the Environmental Assessment in 2018
- ASE Visioning Process produced several Common Ground Recommendations
 - Shift Taxiway 80 feet/widen and strengthen the runway/redevelop terminal/reduce emissions and noise

ALP UPDATE PROJECT OBJECTIVES

- Translate CGR into an ALP Update that meets FAA standards
- Resolve any technical conflicts
 - Air traffic control tower relocation
 - Aviation demand forecast
- Reconcile community goals with FAA criteria
 - Maintain Aspen's quality of life, and achieve environmental goals
 - Provide the community with reliable, affordable commercial air service
 - Meet FAA safety and access criteria

PURPOSE AND NEED FOR AN AVIATION DEMAND FORECAST

- Airport Improvement Program (AIP) funding (entitlement and especially discretionary grants) are necessary elements in maintaining the runway and making other airport improvements, like the terminal redevelopment
- An Updated ALP is required for AIP discretionary funding eligibility
- An FAA-approved aviation demand forecast is a required component of the ALP Update

FAA FORECAST REQUIREMENTS

- FAA requires the use of industry-standard forecast methodologies:
 - Historical trend analysis
 - Market share analysis
 - Regression analysis
 - Professional judgment
- FAA required forecast measurements:
 - Enplaned passengers
 - Aircraft operations
 - Future aircraft fleet mix
 - Based aircraft
 - Peak period activity

FAA FORECAST REQUIREMENTS (CONT'D)

- The Forecast cannot be “constrained” – that is restrictive to any specific type of user or aircraft
- The ALP Update forecast must be “consistent” with the FAA’s Terminal Area Forecast (TAF)¹ before acceptance by the FAA
 - The ALP Update forecast of enplanements, commercial operations (air carrier/air taxi), and total operations must be within:
 - 10% of the TAF in the 5-year forecast period and
 - 15% of the TAF in the ten-year forecast period

1. The Terminal Area Forecast (TAF) is the official FAA forecast of aviation demand published annually for every airport in the National Plan of Integrated Airport Systems. The 2022 TAF was published in March 2023.

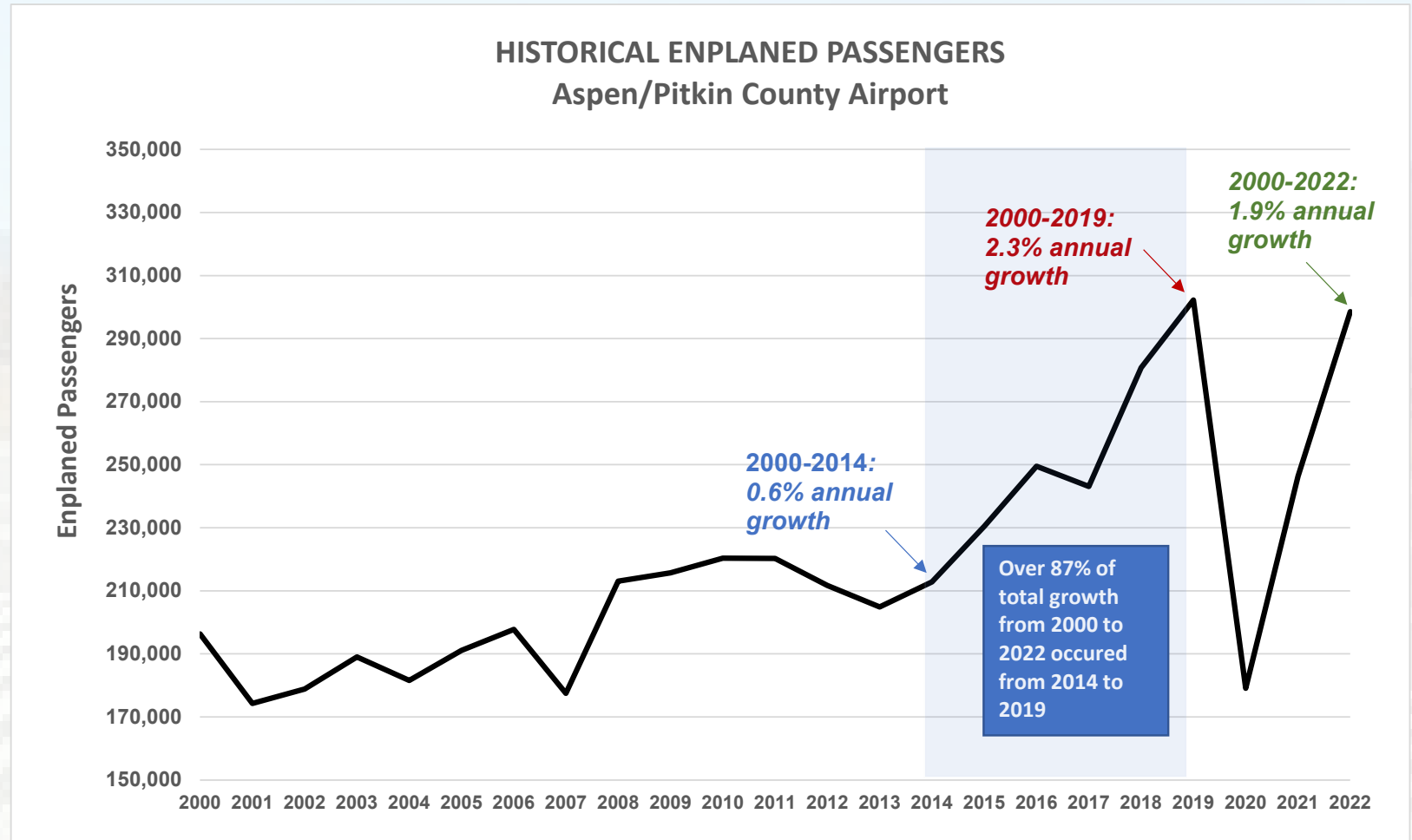
OVERVIEW OF FORECAST APPROACH

- The forecast was developed for 20 years from the base year of 2022
- Lower, mid, and upper-range forecasts were developed for internal consideration
- The FAA requires only one “best estimate” forecast;
(the mid-range forecast is our best estimate and is recommended for FAA submittal)

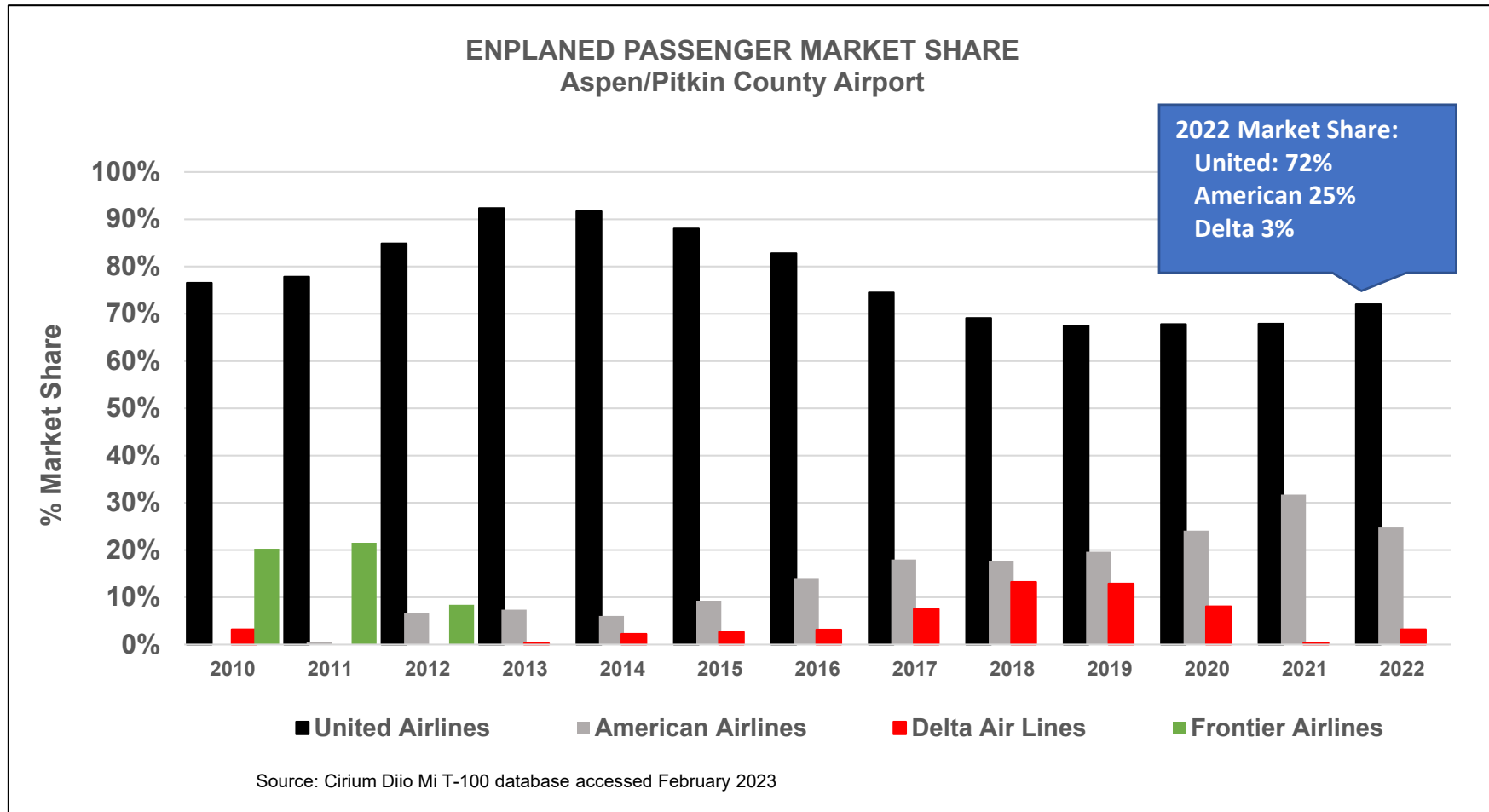
HISTORICAL ENPLANEMENT TRENDS

Historical trends provide guidance for forecast growth ranges:

- 2000-2014: 0.6% annual growth
- 2000-2019: 2.3% annual growth
- 2000-2022: 1.9% annual growth
- Over 87% of total growth from 2000 to 2022 occurred within a six-year period 2014-2019



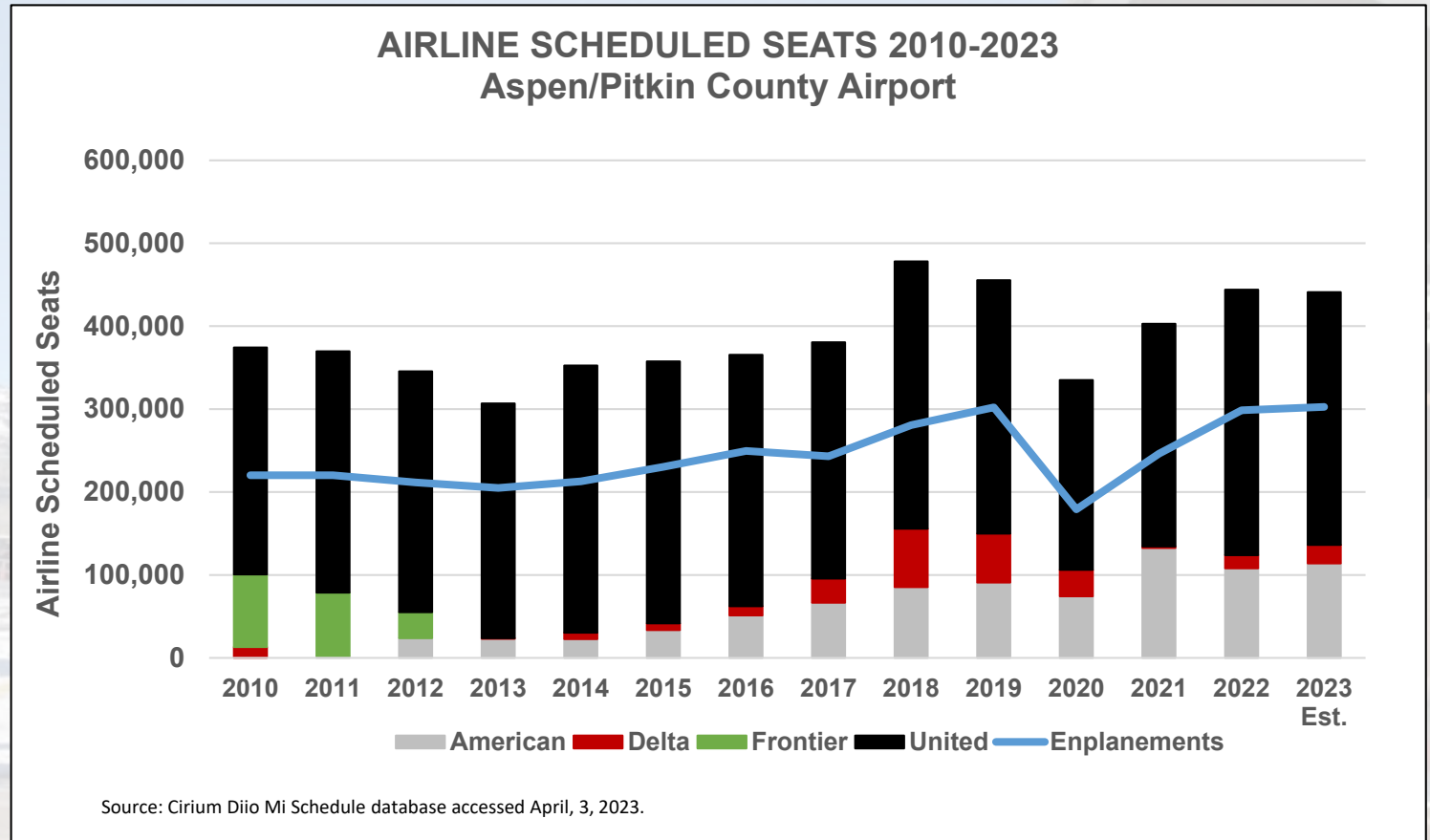
ENPLANEMENTS MARKET SHARE



2022 Market Share:
 United: 72%
 American 25%
 Delta 3%

AIRLINE SCHEDULED SEATS PROVIDE AN INDICATION OF SHORT-TERM FUTURE DEMAND FOR AIR TRAVEL

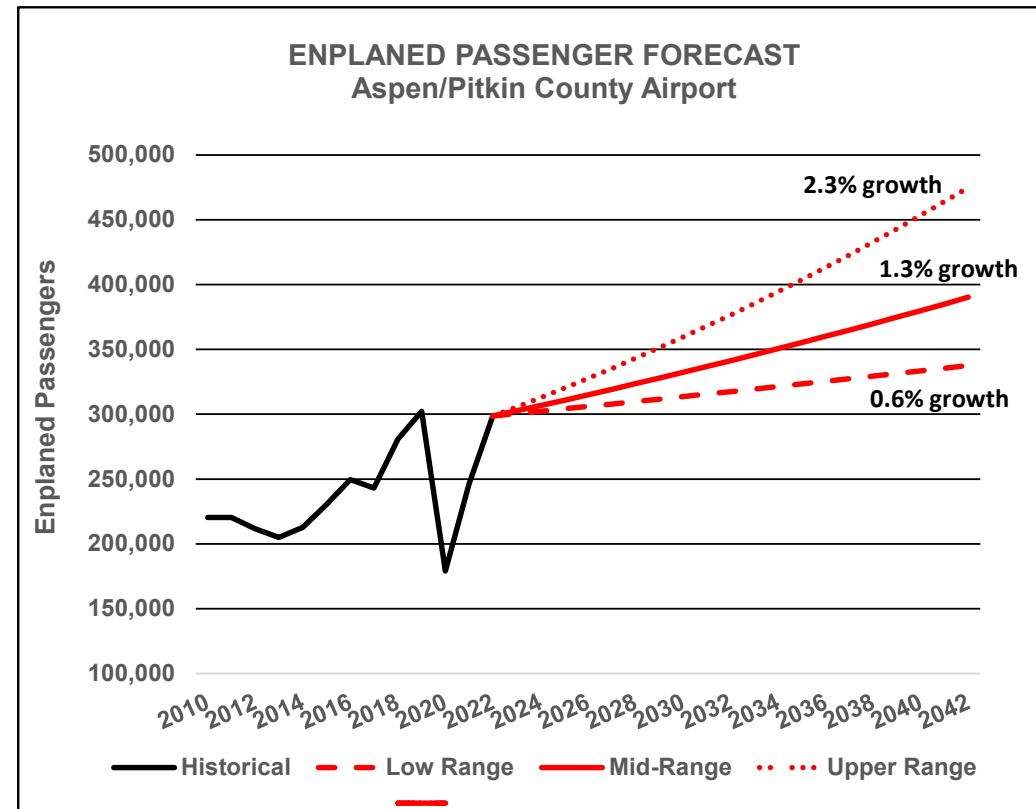
- Scheduled seats peaked in 2018 and fell sharply in 2020 as a result of the pandemic
- Scheduled seats rebounded quickly in 2021 and 2022 but haven't reached the pre-pandemic high set in 2018
- 2023 scheduled seats are down (-1%) from 2022, indicating a conservative airline outlook



ENPLANED PASSENGERS ARE PROJECTED TO INCREASE BETWEEN 0.6% AND 2.3% ANNUALLY THROUGH 2042 (1.3% MID-RANGE)

ENPLANED PASSENGER FORECASTS Aspen/Pitkin County Airport				
	Year	Lower Range	Mid-Range	Upper Range
Historical	2019	302,200	302,200	302,200
	2020	179,110	179,110	179,110
	2021	246,286	246,286	246,286
	2022	298,561	298,561	298,561
Forecast	2027	307,879	319,232	335,298
	2032	317,487	341,334	376,556
	2037	327,395	364,966	422,890
	2042	337,613	390,234	474,926
Forecast Growth				
Annual rate	2022-2042	0.6%	1.3%	2.3%
Total growth	2022-2042	39,052	91,673	176,365

Sources: Historical: Airport management records and Cirium Diio Mi T-100 Database. Forecast: Jacobsen Daniels Associates, March 2023.



THE DIFFERENCE BETWEEN CGR (0.8%) AND MID-RANGE (1.3%) FORECAST IS LESS THAN SIX ADDITIONAL ENPLANEMENTS PER DAY PER YEAR

Enplanement Forecast Comparison Common Ground vs. Mid-Range 2022 - 2042

Year	Common Ground (0.8% growth)	Mid-Range (1.3% growth)	Total Difference in 20-years
Actual 2022	298,561	298,561	-
Forecast 2042	350,142	390,234	40,092
Total growth	51,581	91,673	40,092
Average annual growth	2,579	4,584	2,005
Average-day growth	7.1	12.6	5.5

DETERMINING THE LIKELY AIRCRAFT FLEET MIX IS CRITICAL

- Previous ASE studies have identified aircraft with the operational performance required to operate at ASE
- FAA does not allow restrictions such as: *Section 10.12.030 (C) of the Pitkin County Code which prohibits aircraft operations at ASE with a tip-to-tip wingspan greater than 95 feet and a maximum landing weight over 100,000 pounds.*
- The FAA further limits future aircraft considerations to those currently certified and operating in the national fleet (excludes aircraft in design or under development)

Likely fleet with 95' restriction:

- CRJ-700
- Embraer-175 LR
- ~~Dash 8/Q400 (no longer in U.S. fleets)~~

Likely fleet with no restrictions:

- CRJ-700
- Embraer-175 LR
- Airbus 220-100/300 (DL only)

AIR CARRIER OPERATIONS ARE DERIVED FROM ASSUMPTIONS THAT CONVERT FORECAST ENPLANEMENTS INTO AIR CARRIER AIRCRAFT OPERATIONS

- Average seats per departure are based on projected aircraft size (fleet mix)
- Load factors are based on historical trends for ASE and industry growth projections
- Average seats per departure multiplied by the load factor yields average enplanements per departure
- Enplanements divided by average enplanements per departure yields forecast air carrier departures

FORECAST AIR CARRIER OPERATING ASSUMPTIONS Aspen/Pitkin County Airport

Mid-Range Forecast	Forecast				
	2022	2027	2032	2037	2042
Average seats per departure	68.8	68.8	77.8	83.7	85.7
Average load factor	73.5%	74.0%	74.7%	75.1%	76.7%
Enplanements per departure	50.5	50.9	58.1	62.9	65.7

Source: Actual activity from Airport Management Records and Cirium Diio Mi T-100 database accessed March 2023. Forecast developed by Jacobsen Daniels Associates, March 2023.

AIR CARRIER FLEET MIX IDENTIFIED SIZE AND TYPE OF AIRCRAFT AND AVERAGE SEATS PER DEPARTURE

- CRJ-700 (65-70 seats) is not expected to continue serving ASE past 2032
 - Average age of CRJ-700s (operated by SkyWest for AA, DL and UA) would be approximately 22 years old by 2027
- Embraer EMB-175 LR (70 seats) is expected to begin serving ASE starting 2023/24 through 2042
- Airbus A220-100 (109 seats) and A220-300 (130 seats) is expected to enter fleet by 2032

MID-RANGE FLEET MIX FORECAST
PEAK MONTH AVERAGE DAY SCHEDULED DAILY DEPARTURES
Aspen/Pitkin County Airport

	Mid Range - PMAD Daily Departures					Mid Range - PMAD % Departures				
	2022	2027	2032	2037	2042	2022	2027	2032	2037	2042
Narrowbody Aircraft										
A220-100	0	0	1	3	2	0.0%	0.0%	3.1%	9.1%	5.9%
A220-300	0	0	4	6	8	0.0%	0.0%	12.5%	18.2%	23.5%
Subtotal Narrowbody Aircraft	0	0	5	9	10	0.0%	0.0%	15.6%	27.3%	29.4%
Regional Jets										
CRJ-700	32	22	0	0	0	100.0%	64.7%	0.0%	0.0%	0.0%
EMB-175 LR	0	12	27	24	24	0.0%	35.3%	84.4%	72.7%	70.6%
Subtotal Regional Jets	32	34	27	24	24	100.0%	100.0%	84.4%	72.7%	70.6%
PMAD Aircraft Departures	32	34	32	33	34	100.0%	100.0%	100.0%	100.0%	100.0%

Note: Aircraft included in the fleet mix forecast must be currently operating in the national airline fleet and are limited to those with the operational performance necessary to operate year-round at ASE

Sources: Cirium's Airline Schedule database and T-100 database, Airport Management Records, individual airline Annual Reports Forecast provided by Jacobsen Daniels Associates, March 2023.

CRITICAL DESIGN AIRCRAFT

- The Critical Aircraft is *“the most demanding aircraft type or grouping of aircraft with similar physical and operational characteristics that use an airport regularly. Regular use is 500 annual operations.....”*
- Existing critical aircraft: Gulfstream G500
 - Wingspan: 86.3 feet
 - Maximum takeoff weight (MTOW): 79,600 lbs.
 - Seating configuration; up to 13
- Future critical aircraft: Airbus A220-300
 - Wingspan: 115.1 feet
 - Maximum takeoff weight (MTOW): 156,300 lbs.
 - Seating configuration: 130 seats (Delta Air Lines configuration)

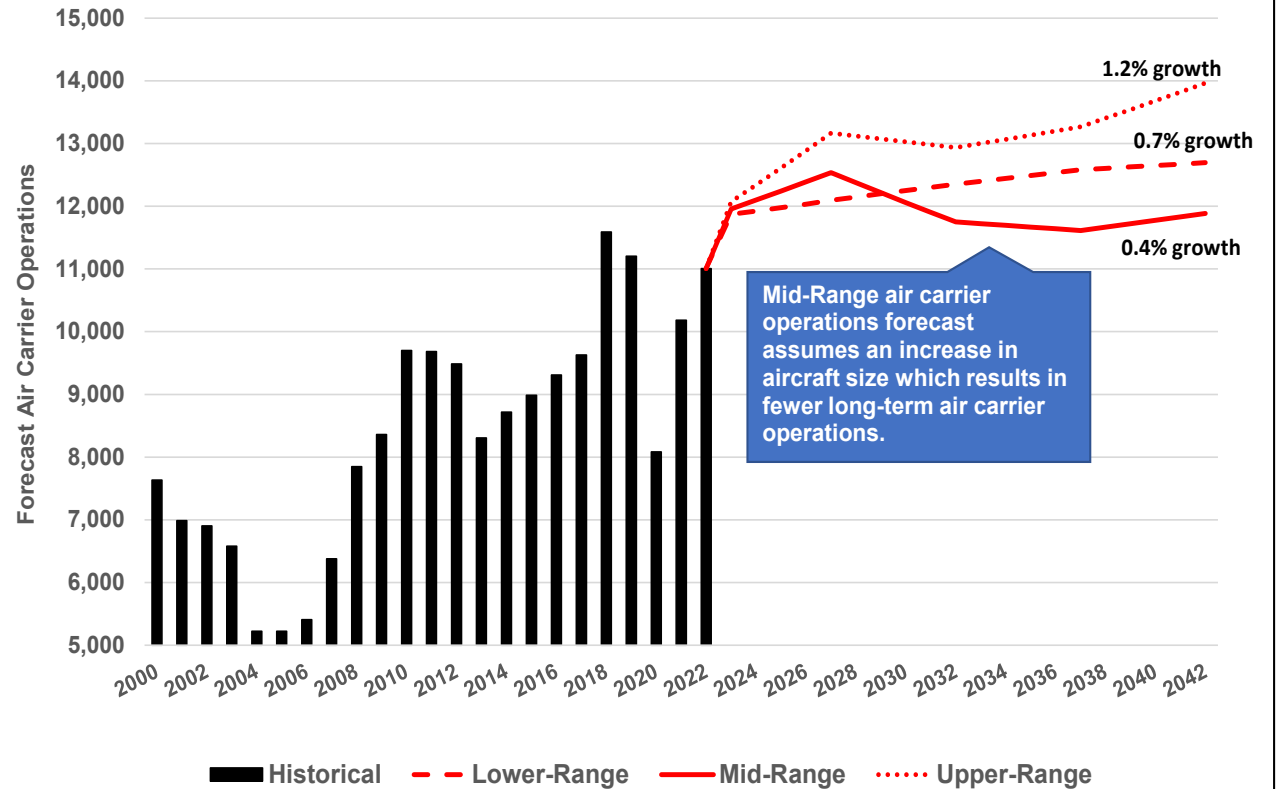
AIR CARRIER OPERATIONS ARE PROJECTED TO INCREASE BETWEEN 0.4% AND 1.2% ANNUALLY THROUGH 2042

AIR CARRIER OPERATIONS FORECAST Aspen/Pitkin County Airport

Activity	Year	Lower Range	Mid-Range	Upper Range
Historical	2019	11,202	11,202	11,202
	2020	8,082	8,082	8,082
	2021	10,183	10,183	10,183
	2022	11,006	11,006	11,006
Forecast	2027	12,097	12,536	13,167
	2032	12,351	11,749	12,935
	2037	12,581	11,613	13,266
	2042	12,693	11,884	13,963
Forecast Compound Annual Growth Rate				
	2022-2027	1.9%	2.6%	3.7%
	2027-2032	0.4%	-1.3%	-0.4%
	2032-2042	0.3%	0.1%	0.8%
	2022-2042	0.7%	0.4%	1.2%

Sources: Historical: FAA OPSNET website (www.faa.gov/opsnet) accessed March 2023. Forecast: Jacobsen Daniels Associates, March 2023.

FORECAST AIR CARRIER OPERATIONS Aspen/Pitkin County Airport



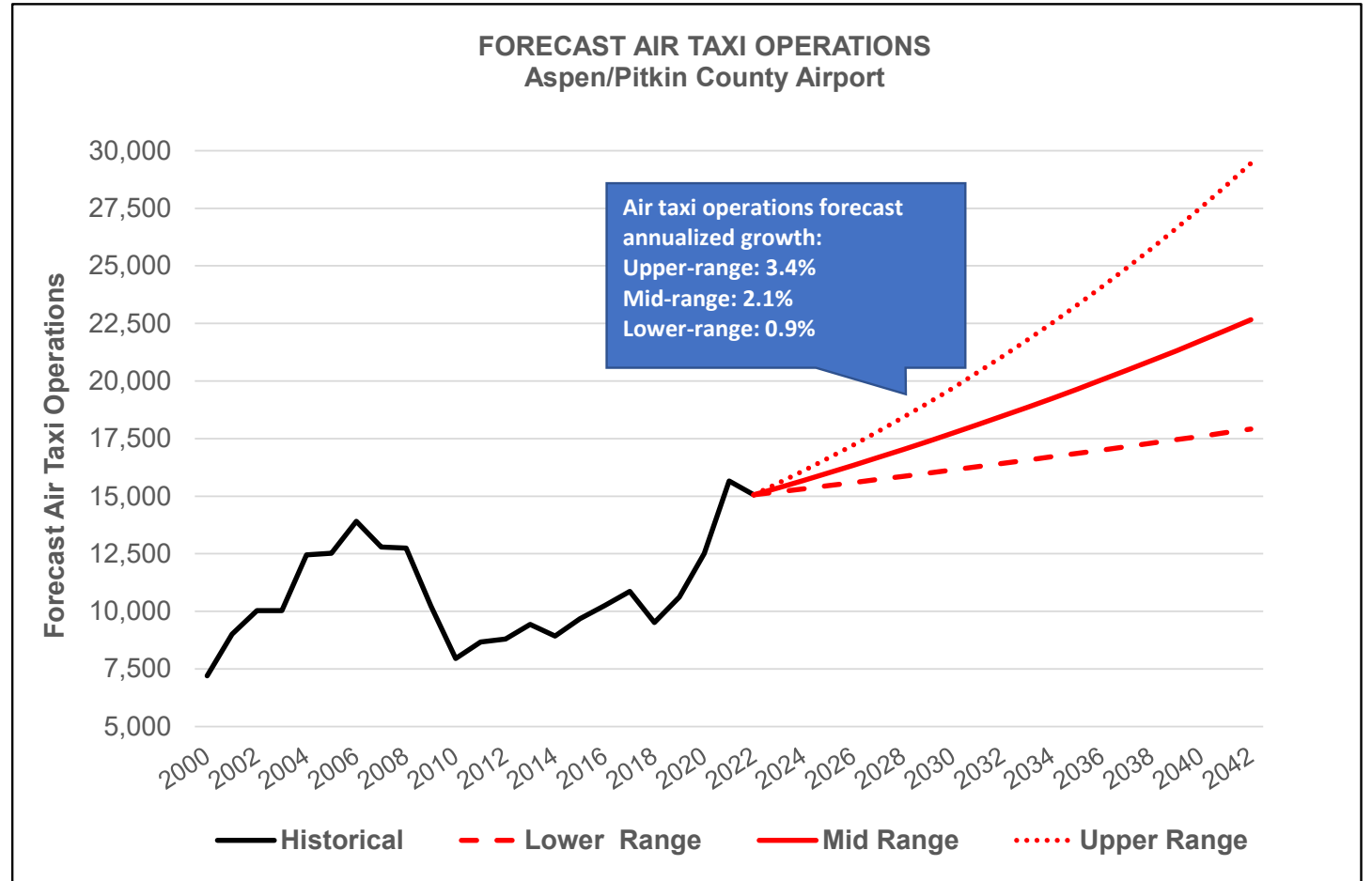
CHANGE IN AIR CARRIER OPERATIONS OVER THE FORECAST HORIZON

Air Carrier Operations Forecast Mid-Range 2022-2042

Year	Total Growth in 20-years
Actual 2022	11,006
Forecast 2042	11,884
Total growth	878
Average annual growth	44
Average-day growth	0.1

AIR TAXI OPERATIONS INCLUDE CHARTER, ON-DEMAND AND FRACTIONAL FLIGHTS WITH A MAXIMUM OF 60 SEATS

- Air taxi operators include carriers such as Aero Charter, Executive Jet, Bubba Air, Mayo Aviation, VistaJet and fractional ownership operators such as NetJets, FlexJets, and Nicholas Air
- Air taxi operations are forecast to increase 2.1% annually, similar to the rate experienced at ASE from 2000 to 2019 (before the pandemic-related surge in air taxi operations in 2020-2021)



AIR TAXI OPERATIONS ARE EXPECTED TO INCREASE BY AN AVERAGE OF 1 OPERATION PER DAY PER YEAR OVER THE FORECAST HORIZON

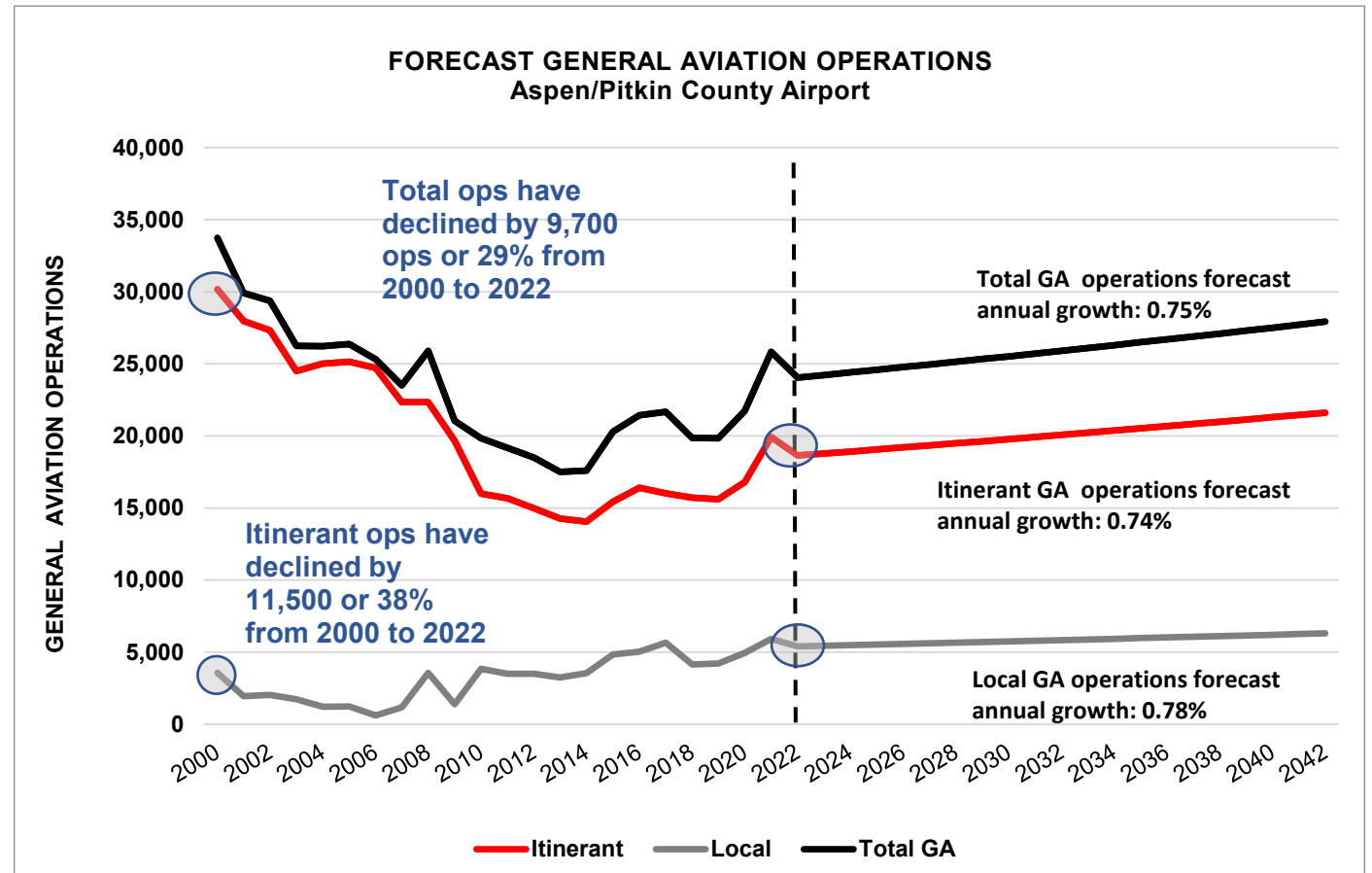
Air Taxi Operations Forecast Mid-range 2022-2042

Year	Total Growth in 20-years
Actual 2022	15,058
Forecast 2042	22,662
Total growth	7,604
Average annual growth	380
Average-day growth	1.0



GENERAL AVIATION OPERATIONS ARE NON-COMMERCIAL OPERATIONS AND TYPICALLY INCLUDE PRIVATE AND BUSINESS/CORPORATE FLIGHTS

- The FAA classified GA operations as itinerant (airport to airport) or local operations (within 20 miles of the tower)
- Local operations forecasts are based on a “trips per capita” formula and are projected to maintain their long-term trend and increase at 0.78% annually
- Itinerant operations forecasts are based on their market share of total national itinerant operations and are projected to increase at 0.74% annually
- Total GA operations are forecast to increase 0.75% annually through 2042



AVERAGE ANNUAL GENERAL AVIATION OPERATIONS ARE EXPECTED TO INCREASE MODESTLY OVER THE FORECAST HORIZON

General Aviation Operations Forecast 2022-2042

Year	Total Growth in 20-years
Actual 2022	24,043
Forecast 2042	27,925
Total growth	3,882
Average annual growth	194
Average-day increase	0.5

THE NUMBER OF FUTURE BASED-AIRCRAFT IS DIRECTLY LINKED TO THE NUMBER OF AVAILABLE BASED-AIRCRAFT PARKING POSITIONS

- Based aircraft parking positions are currently at a total capacity of 96, with about 60 aircraft on a waiting list
- Forecast assumes total based aircraft spaces will accommodate current demand (60 spaces) but will not increase beyond this over the forecast horizon
- Forecast assumes FBO improvements will accommodate current based aircraft demand by 2027
- Based aircraft fleet mix projected to change based on local demand and national long-term projections

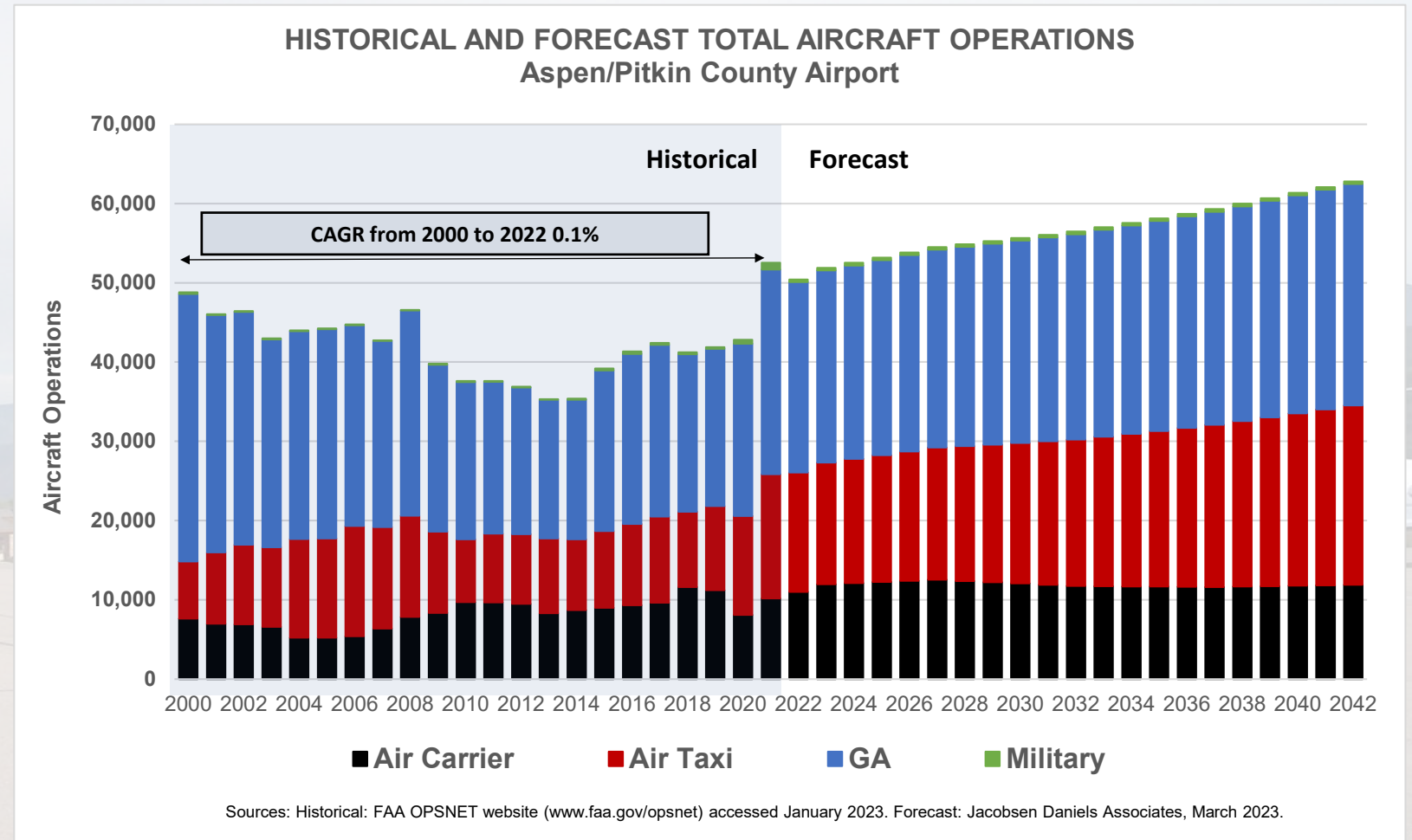
FORECAST BASED AIRCRAFT FLEET MIX
Aspen/Pitkin County Airport

Aircraft Type	2022	2027	2032	2037	2042
Single engine piston	54	76	75	74	73
Multi-engine piston	7	9	9	9	8
Turboprop	20	40	40	40	41
Jet	14	29	30	31	32
Helicopter	1	2	2	2	2
Total	96	156	156	156	156

Source: Historical: Airport Management Records, December 2022. Forecast: Jacobsen Daniels Associates, March 2023.

HISTORICAL OPERATIONS INCREASED 0.1% FROM 2000 TO 2022 AND MODERATE GROWTH IS PROJECTED THROUGH 2042

- Total aircraft operations include air carrier, air taxi, GA (local and itinerant), and military operations
- Total aircraft operations increased at an annual rate of 0.1% from 2000 to 2022
- Total operations are projected to increase at an annual rate of 1.1%



TOTAL AIRCRAFT OPERATIONS ARE EXPECTED TO INCREASE GRADUALLY OVER THE FORECAST HORIZON

Total Aircraft Operations Forecast Mid-range 2022-2042

Year	Total Growth in 20-years
Actual 2022	50,423
Forecast 2042	62,801
Total growth	12,378
Average annual growth	619
Average-day growth	1.7

PEAK PERIOD FORECASTS ARE USEFUL FOR AIRPORT FACILITY AND OPERATIONS PLANNING

- Annual operations are allocated by peak month, peak month average day (PMAD), and peak hour of the PMAD
- Current airfield capacity is approximately 32 operations per hour in visual meteorological conditions (VMC)¹
- Future airfield capacity may increase to as much as 40 operations per hour in VMC¹ through fleet mix changes, aircraft technology, radar enhancements, etc.
- The existing seasonal and holiday peak period surges are expected to continue over the forecast horizon

1. Airspace Impact and Aircraft Feasibility Assessment Update, Aspen/Pitkin County Airport, prepared by Lean Engineering, August 25, 2018

PEAK PERIOD AIRCRAFT OPERATIONS FORECAST
Aspen/Pitkin County Airport

Lower Range	Actual	Forecast Operations			
	2022	2027	2032	2037	2042
Annual operations	50,423	53,112	55,015	56,961	58,859
Peak month	5,897	6,211	6,434	6,662	6,884
Peak month average day	190	200	208	215	222
PMAD peak hour	25	26	27	28	29

Mid Range	Actual	Forecast Operations			
	2022	2027	2032	2037	2042
Annual operations	50,423	54,504	56,464	59,303	62,801
Peak month	5,897	6,374	6,603	6,935	7,345
Peak month average day	190	206	213	224	237
PMAD peak hour	25	27	28	29	31

Upper Range	Actual	Forecast Operations			
	2022	2027	2032	2037	2042
Annual operations	50,423	56,265	60,236	65,401	71,671
Peak month	5,897	6,580	7,045	7,649	8,382
Peak month average day	190	212	227	247	270
PMAD peak hour	25	28	30	32	36

Sources: Historical: FAA OPSNET website (www.faa.gov/opsnet) accessed January 2023. Forecast: Jacobsen Daniels Associates, March 2023.

FORECAST CONSIDERATIONS

- Forecasting is as much (black) art as it is science; this ALP Update forecast is not an oracle, but rather is intended to provide a reasonable basis for facilities and operations planning and federal funding
- It is a professional “educated estimate” of future aviation demand as of today; actual outcomes are uncertain and likely to differ over time from current projections
- The timeline for the completion of the proposed airfield improvements is uncertain and will depend on funding availability and other factors which could alter the results of this forecast
- This forecast should be reviewed and revised every 5+ years as needed to reflect local and industry conditions

KEY TAKEAWAYS

- Enplaned passengers are forecast to increase at 1.3% annually, or approximately 13 additional pax per day per year (or <6 additional passengers beyond the CGR per day)
- The critical design aircraft is projected to be the Airbus A220-300, which is forecasted to initiate service at ASE by 2032
- The forecast appears to align with Common Ground Recommendations related to terminal development (to be confirmed during the facility requirements portion of ALP Update)
 - Terminal to be “right-sized and just big enough.”
 - 75,000 to 90,000 sq. ft. footprint
 - 6 to 8 gates
- Total aircraft operations are forecast to increase by 1.1% annually, or less than 2 additional operations per day per year
- Locally based aircraft are projected to increase from 96 (+60 currently waiting for space) to 156 aircraft (and no waitlist)

NEXT STEPS – AAB Direction Needed

- Discuss
- Take public comment
- Take a vote on recommending this document to go on to the BoCC for action
- BoCC will follow resolution process
 - Work Session
 - Regular Meeting – Resolution with Public Comment
 - Submit to FAA for official review and approval