



ASPEN/PITKIN COUNTY AIRPORT

Mead  
& Hunt



# Fly with Integrity Program Development

March 2025

NOISE MONITORING & CONSULTATIVE ENVIRONMENTAL SERVICES

A large, stylized graphic of wings, rendered in a dark blue color, centered behind the text. The wings are composed of multiple overlapping, curved layers, giving them a sense of depth and movement. They extend horizontally across the middle of the frame.

*Fly With Integrity Program*

# Fly With Integrity Goals

- Achieve noise reduction at the Airport through a voluntary program which encourages users to operate the quietest aircraft in the quietest manner
- Encourages pilots to operate in a way that continues to allow the SAFE operation of an aircraft, while encouraging them to fly as quietly as possible.



# Key Features of a Fly with Integrity (FWI) Program

- Designed to monitor, measure and EDUCATE
- Scores operators on how they perform against various measures and metrics
- Scores are based on a 0-100 scoring system
- Program measures designed to address both individual operator and airport wide noise levels
- Program does not tell operators how to fly their aircraft, only reports the results and offers ways to improve
- Program designed to address changing conditions and expectations



# Example Potential FWI Scoring Report

- Operations are grouped per category of operator
- Each Operator is scored and ranked separately
- Scores for each FWI measure are summed to provide a total FWI score
- Individual Scores are summed to determine airport wide score

	Operator	Fly with Integrity Measures			FI Measures Score	Bonus Points		Total FI Score
		Measure 1	Measure 2	Other Measures ...		Bonus 1	Other Bonus Measures ...	
		25	25	50		100	3	
Regional Jets	United	19.8	21.3	39.2	80.3	-	-	80.3
	Delta	19.2	23.2	37.3	79.7	-	-	79.7
	Amercian	17.2	25.0	36.0	78.2	-	-	78.2
Part 135 Jets	Netjets	17.3	20.3	42.1	79.7	2.0	-	81.7
	Flexjet	18.2	18.2	41.0	77.4	2.0	-	79.4
	...	17.5	17.5	38.2	73.2	1.0	1.0	75.2
Individual Jets	N1235	24.1	24.1	41.1	89.3	1.0	-	90.3
	N45WJ	15.1	17.1	42.1	74.3	-	3.0	77.3
	...	16.8	16.8	39.0	72.6	-	-	72.6
<b>Airport Total</b>		<b>17.9</b>	<b>22.1</b>	<b>39.5</b>	<b>79.5</b>	<b>0.9</b>	<b>0.1</b>	<b>80.5</b>

# Common Ground 30% Noise Reduction Goal

## ✈️ Achieve and measure future noise reductions

- ▶ The BOCC has established a noise reduction goal to reduce the noise impacts around the airport
- ▶ Suggest that this reduction NOT be based solely on a FAA metric (i.e., DNL), but also include other factors that account for what people experience
- ▶ FWI scoring can be the measure to determine if the goal is achieved



# FWI Program Measures Development

## ✈ Identify Program Participants

- ▶ Corporate jets
- ▶ Commercial Service operators (UAL, AAL, DAL)
- ▶ Other (helicopters, propeller training?)
- ▶ Exempt: Life Flights, military

## ✈ Program Measures

- ▶ Fleet Noise Quality based on aircraft certification
- ▶ High Noise Events at measurement sites
- ▶ Curfew (including shoulder hours)
- ▶ Measured Quiet Departure
- ▶ Noise Contour Size (DNL / Daytime LEQ)
- ▶ BONUS: Commitment to Minimize Ground Noise
- ▶ BONUS: Sustainability Commitment
- ▶ BONUS: Quietest Aircraft Types



# FWI Measure 1 - Fleet Noise Quality

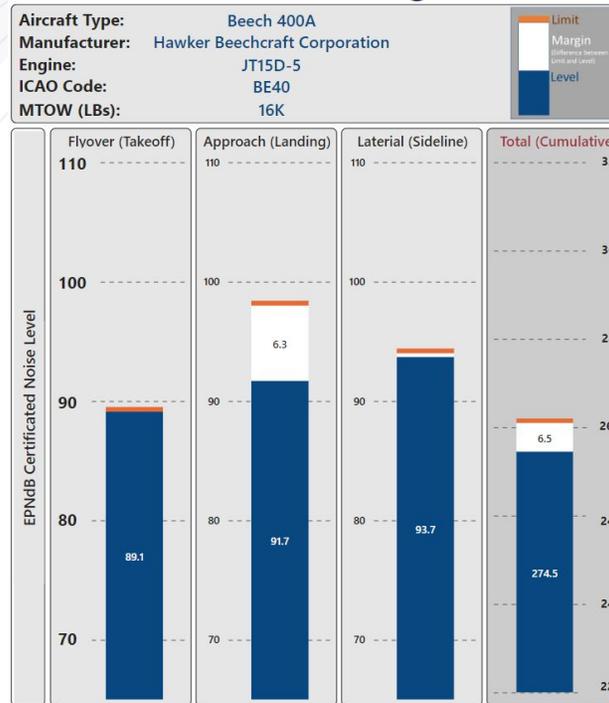
## Stage 3 Aircraft

✈ Scoring based upon certificated noise level of each aircraft type

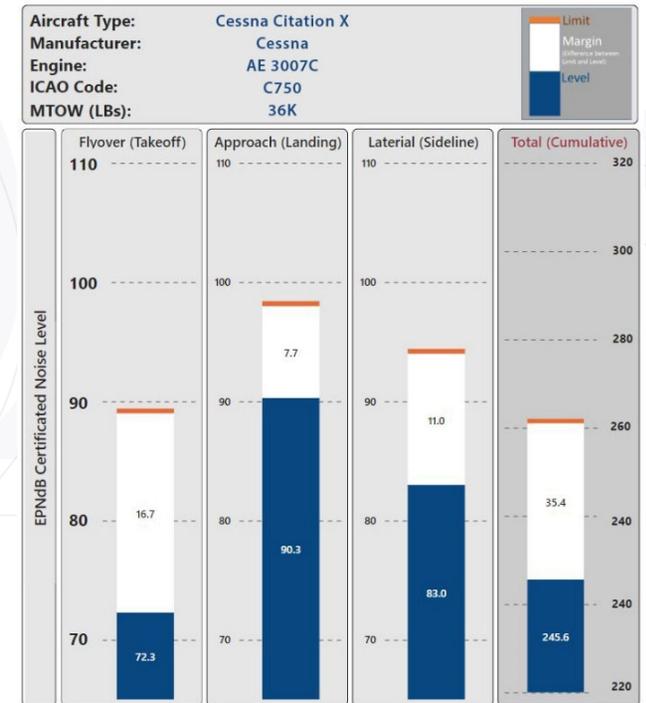
✈ Certification Stage limits

- ▶ **Stage 2** – Banned
- ▶ **Stage 3** – Aircraft quieter than the Stage 3 limits at three measurement locations
- ▶ **Stage 4** – The sum of the three measurement points are 10 dB quieter than Stage 3
- ▶ **Stage 5** – The sum of the three measurement points are 18 dB quieter than Stage 3

### Loud Stage 3



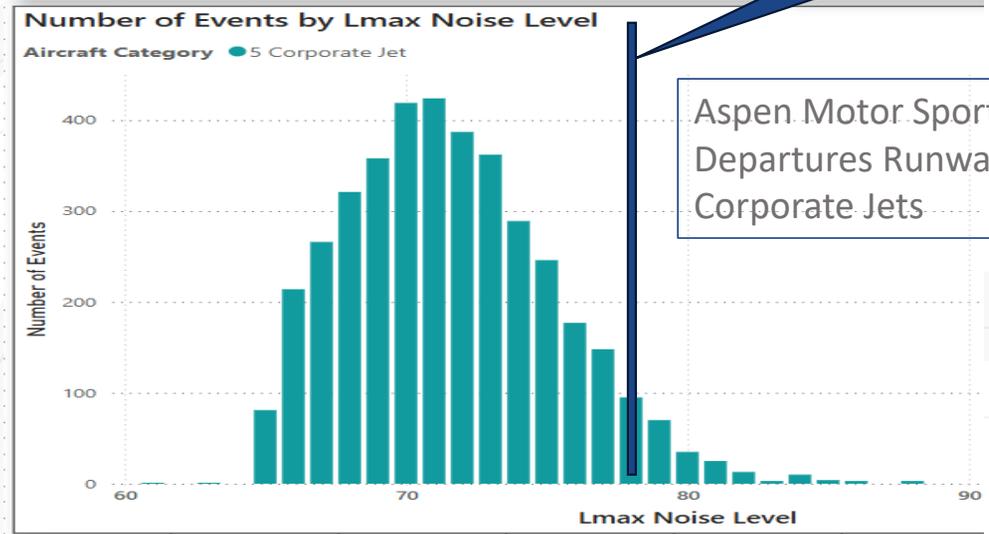
### Quiet Stage 3



# FWI Measure 2 - Measured High Noise Events

→ Loudest 10% of measured noise levels will be considered a high noise level event

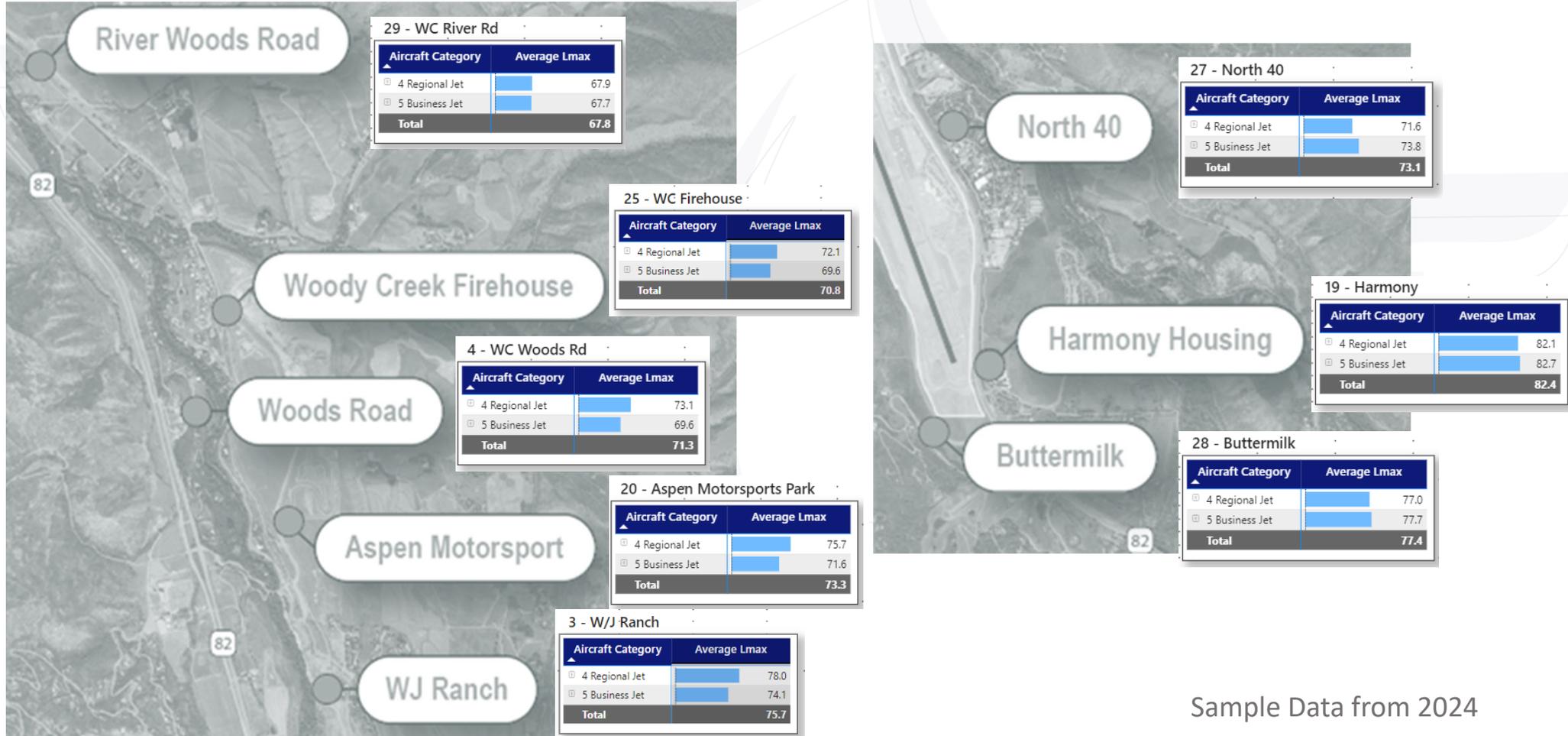
- ▶ Value specific for:
  - Each Noise Monitoring Site
  - Departure and arrivals
  - Corporate Jets and Commercial Jets
- ▶ 10% determined from actual measured data in 2024 and 2025
- ▶ 75 dBA used when 10% value is less than 75 dBA
- ▶ *Example of recent GLF2 Departure shows it is higher than the high noise thresholds for each NMT site*



Site	Regional Jets		Corporate Jets		GLF2 Dept 33
	Dept 33	Arr 15	Dept 33	Arr 15	
Harmony	87	80	88	82	100
Buttermilk	81	76	84	77	92
North 40	77	76	78	80	82
W/J	81	75	79	75	86
WC Woods Rd	75	75	75	75	80
Aspen Motor Sport	78	75	75	75	82
Fire Station	76	75	74	75	81
River Road	75	75	75	75	76

# FWI Measure 2 Continued - Sample Measurement Data

## 2024 Average Measured LMAX for Runway 33 Departures



Sample Data from 2024

## FWI Measure 3 - Curfew (including shoulder hours)

### → Curfew Hours

- ▶ No Corporate Jet Departures between 10:30 pm and 7:00 am
- ▶ No Corporate Jet Arrivals between 11:00 pm and 7:00 am

### → FWI will track the following within the program

- ▶ All curfew operations
- ▶ All operations between 10:00 pm and the start of the curfew hours (i.e., *shoulder hours*) will be tracked and scored in FWI to discourage operations in those hours



# FWI Measure 4 – Measured Quiet Departure

✈ Scoring is based on comparing aircraft of the same type

- ▶ **FI positive points (good!):** Measured noise value of a departure is 3+ dBA quieter than historical average.
- ▶ **FI negative points (bad!):** Measured noise value of a departure is 3+ dBA louder than historical average.

✈ Based upon measured results

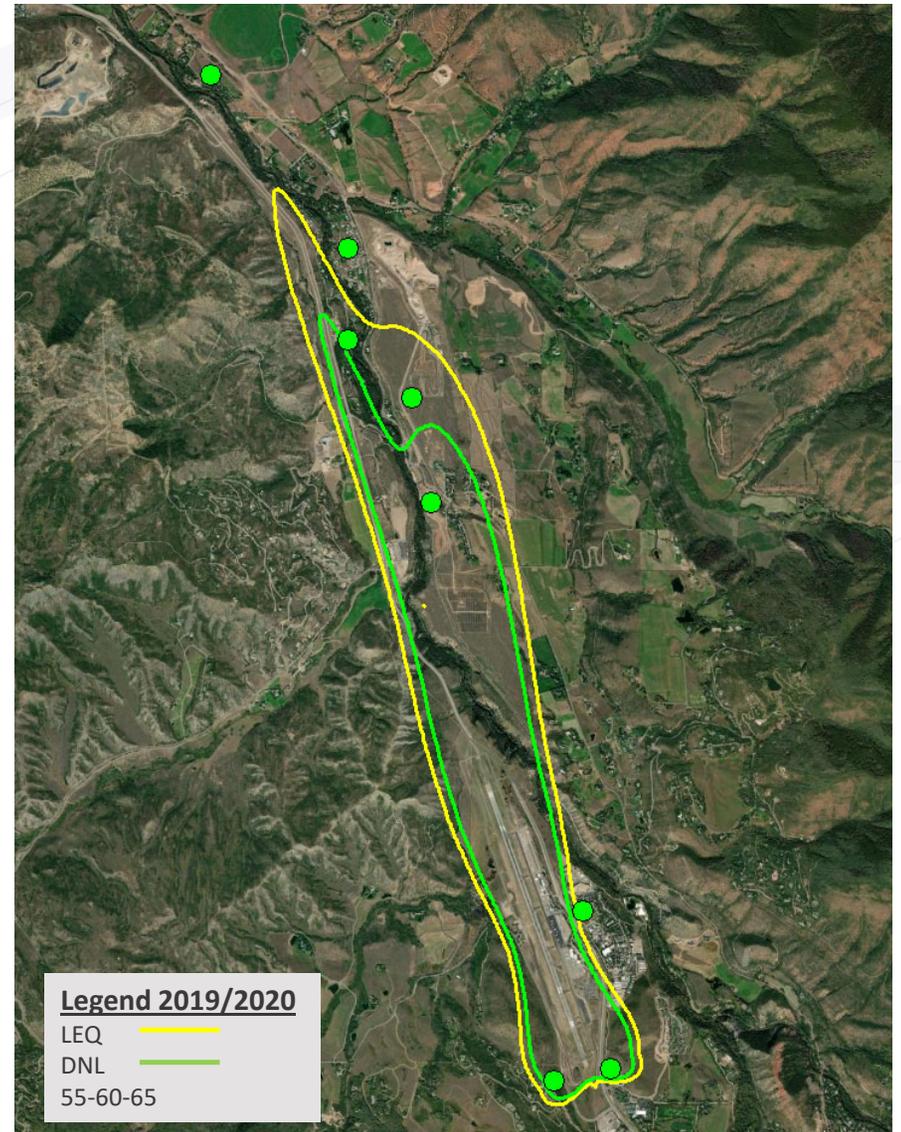


Aircraft Category	Number of Events	Average Lmax
<b>5 Corporate Jet</b>	<b>7,278</b>	<b>69.6</b>
GLF3	1	84.3
GLF2	2	80.3
FA50	99	74.7
H25A	2	74.6
FA20	4	74.4
WW24	8	74.1
G150	25	74.0
C650	52	73.0
ASTR	17	72.7
FA10	3	72.2
BE40	107	72.2
FA7X	165	71.7
F900	257	71.3
EA50	1	70.8
C560	101	70.7
G200	1	70.6
GLEX	300	70.6
HA4T	19	70.5
GALX	92	70.5
LJ35	24	70.4
H25B	242	70.4
CL35	743	70.3
LJ70	6	70.2
CL30	445	70.2
FA8X	15	70.1
GLST	118	70.1

# FWI Measure 5 - DNL / LEQ Noise Contour Size

## → Using DNL/LEQ in Fly with Integrity and 30% reduction goal

- ▶ Measure change in size of the 55 DNL/LEQ
- ▶ Result is applied to all operators
- ▶ Video to Explain metric to the public



# FWI Bonuses – Incentive Special Opportunities to Improve

## ✈️ **FWI Bonus 1 – Commitment to Minimize Ground Noise**

- ▶ Agree to minimize APU/GPU use, as feasible
- ▶ Develop Voluntary guidelines for use of APU time limits
- ▶ Investigate use of the GPU stations at parking locations against the fence with engines facing North 40
- ▶ Operators that sign a commitment to minimize ground noise are given bonus points

## ✈️ **FWI Bonus 2 – Sustainability Commitment**

- ▶ Participate in NBAA Environmental Sustainability Program
- ▶ Includes Emission reduction, Community engagement, Environmental stewardship

## ✈️ **FWI Bonus 3 – Quietest Aircraft Types**

- ▶ Bonus for flying the quietest of the Stage 5 aircraft
- ▶ Stage 5 Plus – the sum of the three measurement points\* are 28 dB quieter than Stage 3

\* Reduction is based on the sum of the three measurement points, including take-off, approach, and sideline



# Example Potential FWI Scoring Report

- Each Operator is scored and ranked separately
- Airport wide measures are all given the same score
- Airport total used to determine 30% reduction goal
- Tier categories allow more operators to gain High Tier acknowledgement

Operator	Fly with Integrity Measures					FWI Measures Score	Bonus Points			Total FWI Score	TIER FWI Tier
	Fleet Quality Score	High Events	Night Operations	Quiet Departure	DNL/LEQ Contour Size		Commitment to Minimize Ground Noise	Sustainability Commitment	Quietest Aircraft Types		
Points	25	25	25	15	10	100	4	3	3		
United	15.0	16.8	22.0	12.0	6.0	71.8	-	-	-	71.8	FWI Compliant
Delta	14.0	16.2	23.2	10.0	6.0	69.4	-	-	-	69.4	FWI Compliant
American	14.0	14.2	25.0	9.0	6.0	68.2	-	-	-	68.2	FWI Compliant
NetJets	19.0	14.3	20.3	12.0	6.0	71.6	2.0	-	1.0	74.6	FWI Compliant
Flexjet	20.0	15.2	18.2	10.0	6.0	69.4	2.0	-	1.0	72.4	FWI Compliant
...	16.0	14.5	17.5	12.0	6.0	66.0	1.0	-	-	67.0	FWI Compliant
N1235	25.0	21.1	24.1	12.0	6.0	88.2	1.0	-	3.0	92.2	FWI Top Tier
N45WJ	16.0	12.1	15.1	12.0	6.0	61.2	-	-	1.0	62.2	FWI Compliant
...	9.0	13.8	16.8	12.0	6.0	57.6	-	-	-	57.6	FWI Low Tier
<b>Airport Total</b>	<b>14.0</b>	<b>14.9</b>	<b>22.1</b>	<b>12.0</b>	<b>6.0</b>	<b>69.0</b>	<b>0.9</b>	<b>0.9</b>	<b>0.1</b>	<b>70.0</b>	% FWI Top Tier <b>10%</b>

Fly With Integrity RATING	FWI SCORE
FWI Top Tier	90-100+
FWI Compliant	60-89.9
FWI Low Tier	0-59.9

