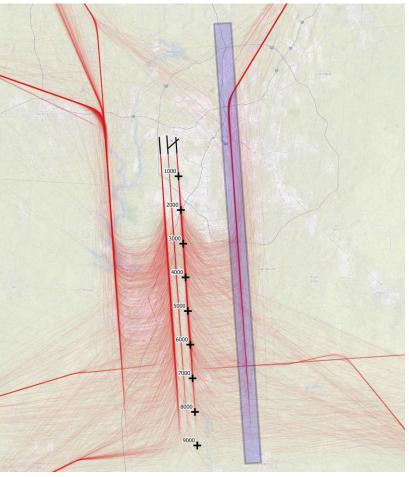
Review of FAA Alternative to ACR Recommendation 3

May 2022



Review of ACR Recommendation #3

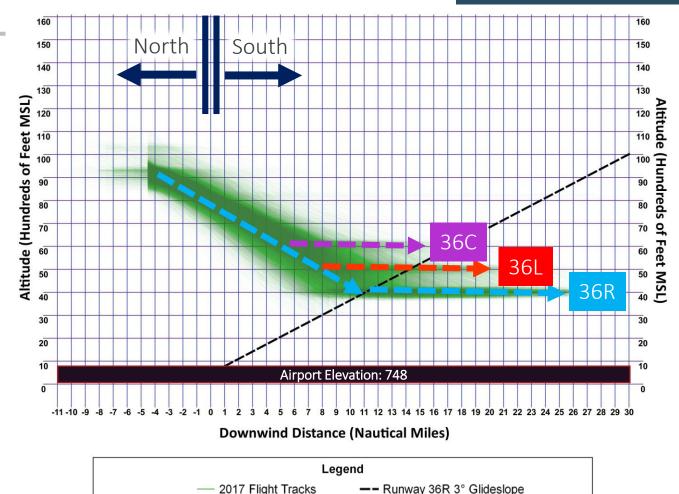
Increased arrival altitudes on downwind leg of CHSLY STAR





Downwind leg of CHSLY STAR

- Aircraft currently level off on the north flow east downwind before turning to intercept final approach at the following altitudes by arrival runway into CLT
 - 18L: 4,000 feet
 - 18C: 6,000 feet
 - 18R: 5,000 feet
- These altitudes are related to maintaining aircraft vertical separation of 1,000 feet during turn from the downwind leg to the final approach course

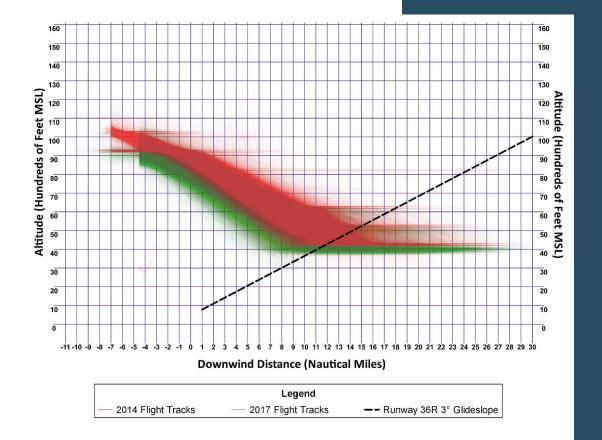


hmmh

ACR Slate Recommendation 3 Return CAATT Waypoint to Pre-Metroplex location

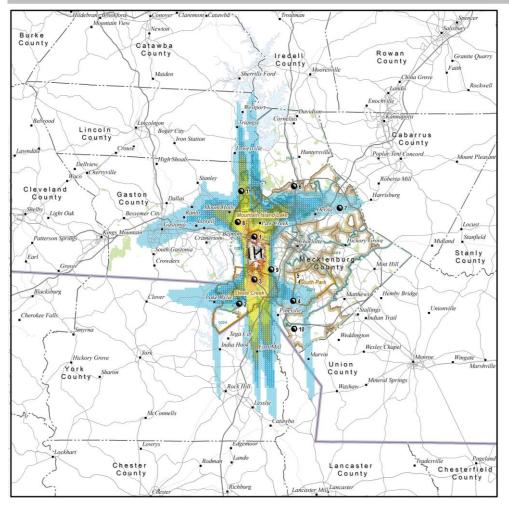
Affected one (eastern) downwind leg for north flow arrivals

- Bring altitudes on CHSLY arrival closer to pre-Metroplex altitudes
- Under preliminary analysis using the ACR criteria¹, this recommendation is expected to have a net benefit in noise reduction to over 80,000 residents in the Charlotte Metropolitan area
 - Analysis looked at raising CAATT and EPAYE by 1,000 ft
 - Analysis completed prior to submitting the ACR Slate to FAA

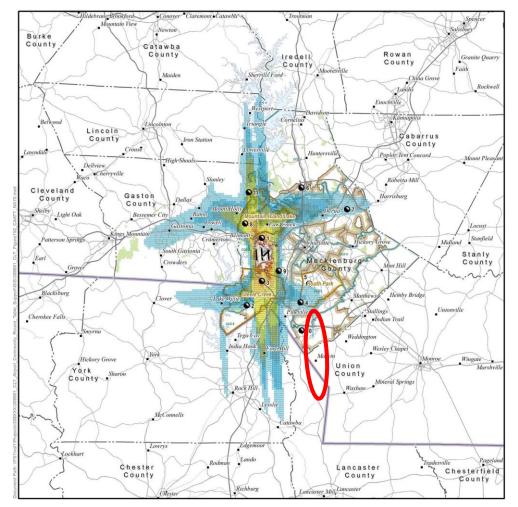


¹ACR criteria is the number of aircraft noise events above 70 dB.

Number of Events Above 70 dB (N70) Raised Altitudes on CHSLY STAR (North and South Flows Depicted)



2018 Baseline

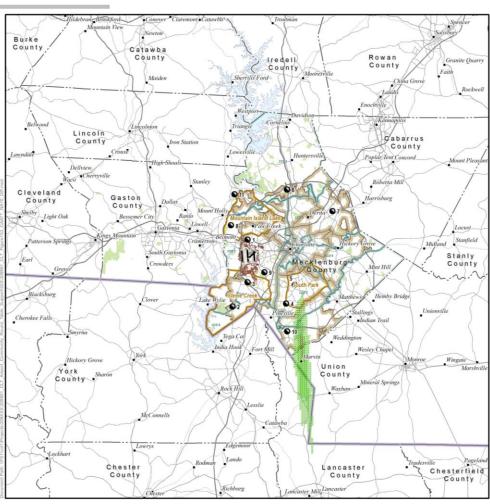


Alternative: Raise Altitudes at CAATT/EPAYE



Number of Noise Events Above 70 dB (N70) Difference – Raised Altitudes on CHSLY STAR Compared to Baseline

N70 Difference Interval (Events)	Count of Grid Points / % Change	Count of Population / % Change	
Less than -75	0 / 0.0%	0 / 0.0%	
-75 to -25	5 to -25 22 / 0.1% 5,092 / 0.2%		
-25 to -10	165 / 0.4%	19,009 / 0.9%	
-10 to -1	522 / 1.4%	56,143 / 2.6%	
-1 to 1	37,592 / 98.1%	2,103,317 / 96.3%	
1 to 10	0 / 0.0%	0 / 0.0%	
10 to 25	0 / 0.0%	0 / 0.0%	
25 to 75	0 / 0.0%	0 / 0.0%	
Greater than 75	0 / 0.0%	0 / 0.0%	
Total	38,301 / 100.0%	2,183,561 / 100.0%	





Number Above Lmax 70 Grid Analysis January 1, 2018 through December 31, 2018 CLT Operations with Increase in Altitude at CAATT and EPAYE Compared to Baseline Operations

Runway		
Airport Boundary (Approxima	te)	
Difference Grid		
-75+		
-25 to -75		
-10 to -25		
-1 to -10		
-1 to 1 (No Color)		
1 to 10		
10 to 25		
25 to 75		
75+		
State Boundary		County Boundary
Highway		Minor Roads
Major Roads		Railroad
Charlotte Regions		
City Council District Boundari	ies	
County Commission Districts		
Water / Stream		Open Space
Landmark Locations		
1 West Mecklenburg High		7 UNCC
		8 US Whitewater Center
		 9 Renaissance Park 10 Ballantyne
	001	11 Mountain Island Lake
6 NorthLake Mall		TT Mountain latend bake
	mber 2018	. (Parks, Community Points, Lakes, arks, Community Points); York County
	Difference Grid -754 -25 b -75 -10 b -25 -10 to -25 -1 to -10 -1 to 1 (No Color) 1 to 10 25 to 75 25 to 75 51ate Boundary Highway Major Roads Charlotte Regions Charlotte	-75+ -25 to -75 -10 to -25 -1 to -10 -1 to 1 (No Color) 1 to 10 10 to 25 25 to 75 75+ State Boundary Highway Major Roads Charlotte Regions Cuty Council District Boundaries County Commission Districts Water / Stream Landmark Locations 1 West Mecklenburg Highol 2 South Park Mall 6 NorthLake Mall

- 709 grid points (1.9%) / 80,244 people (3.7%) would experience fewer events above 70 dB Lmax with increased arrival altitude at CAATT
- No grid points or people would experience more events above 70 dB Lmax with increased arrival altitude at CAATT

FAA Proposed Alternative

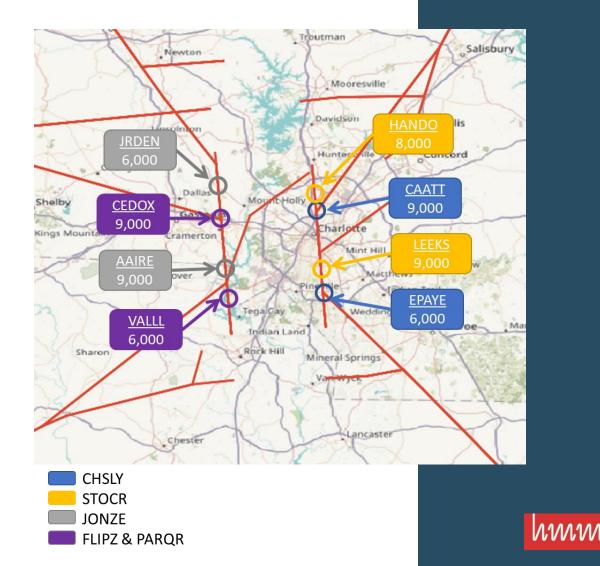
Raise arrival altitudes on all four arrival downwind legs

- north and south flow
- east and west of CLT



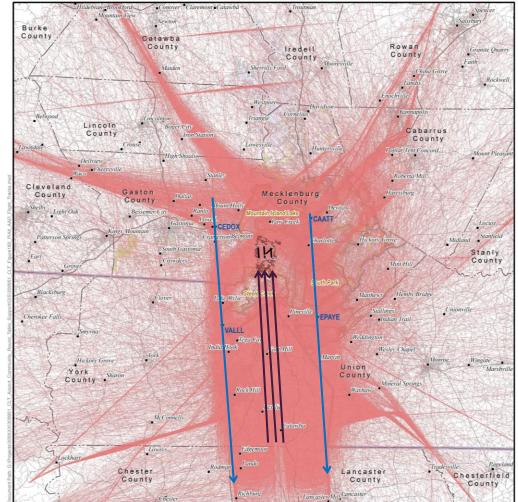
FAA Alternative Increased Altitudes on All Downwind Arrivals

- Modify altitude at CAATT and EPAYE to 10,000 ft and 7,000 ft
 - <u>1,000 ft higher</u> than current restrictions
 - No increase in flight miles or change to flight tracks
- Requires that the corresponding fixes for other STARs must be raised for operational continuity
 - <u>1,000 ft higher</u> than current restrictions
 - JONZE STAR: AAIRE and JRDEN <u>raised to</u> 10,000 ft and 7,000 ft
 - FLIPZ and PARQR STARs: CEDOX and VALLL raised to 10,000 ft and 7,000 ft
 - STOCR STAR: LEEKS raised to 10,000 ft; HANDO remains at 8,000 ft



Estimated Flight Tracks, Runways 23 and 36 Raised Altitudes on All Downwind Arrivals (North and South Flows Depicted)

- Aircraft currently level off at the following altitudes based on arrival runway at CLT (% use of runway)
 - 36L: 5,000 feet (31.2%)
 - 36C: 6,000 feet (6.1%)
 - 36R: 4,000 feet (22.9%)
- Over 60% of aircraft on these downwind legs
 - Resulted in N70 events on downwind legs





on All Downwind Arrivals Arrival Tracks Waypoint Runway Airport Boundary (Approximate - - County Boundary Minor Roads Highway Railroad Charlotte Regions City Council District Boundaries County Commission Districts Open Space Water / Stream Downwind Final

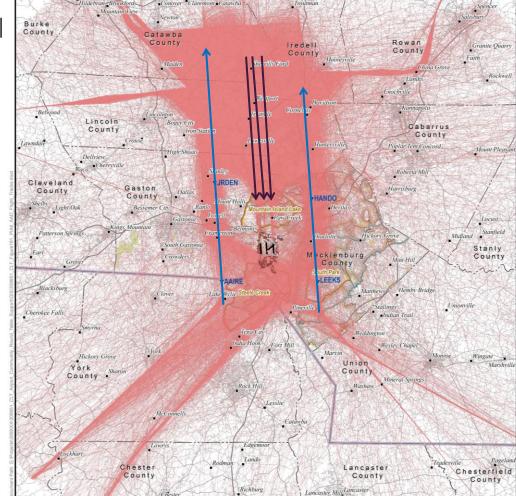
Data Source: Mechienberg County GIS, November 2018, (Parka, Community Pointa, Lakea, Ponda, Roads); Gastion County GIS, November 2018, (Parka, Community Pointa); York County GIS, March 2019, (Parka, Community Pointa); CLT, March 2019, (County Boundary, City Boundary, Charolite Regions)

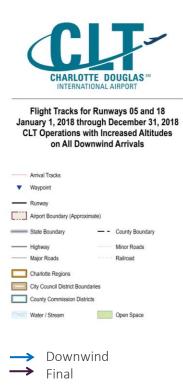




Estimated Flight Tracks, Runways 05 and 18 Raised Altitudes on All Downwind Arrivals (North and South Flows Depicted)

- Aircraft currently level off at the following altitudes based on arrival runway at CLT (% use of runway)
 - 18L: 4,000 feet (13%)
 - 18C: 6,000 feet (4.2%)
 - 18R: 5,000 feet (20.6%)
- Less than 40% of aircraft on these downwind legs
 - Did not result in N70 events on downwind legs



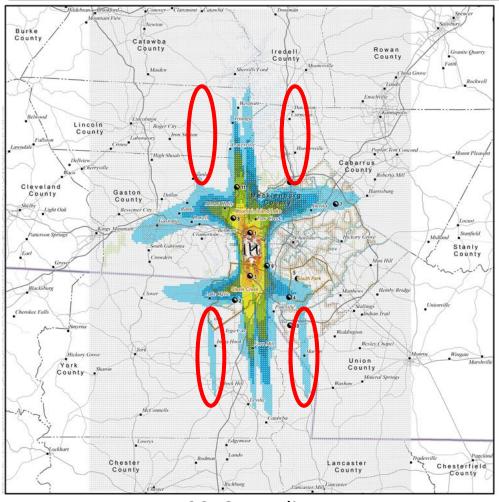


Data Source: Machienberg County GIS, November 2018, (Parks, Community Points, Lakes, Ponds, Roads); Geston County GIS, November 2018, (Parks, Community Points); York County GIS, March 2019, (Parks, Community Points); CLT, March 2019, (County Boundary, City Boundary, Charolette Regions)

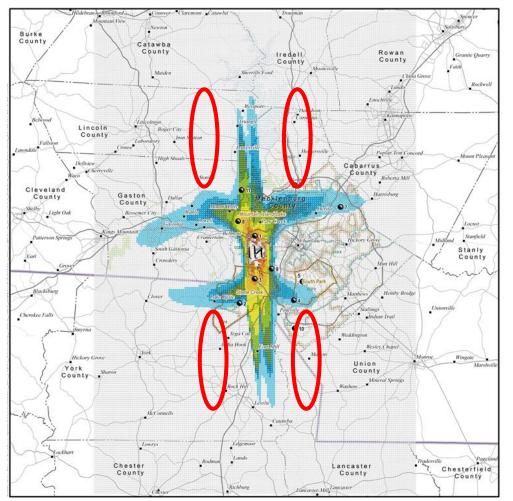




Number of Events Above 70 dB (N70) Raised Altitudes on All Downwind Arrivals (North and South Flows Depicted)



2018 Baseline

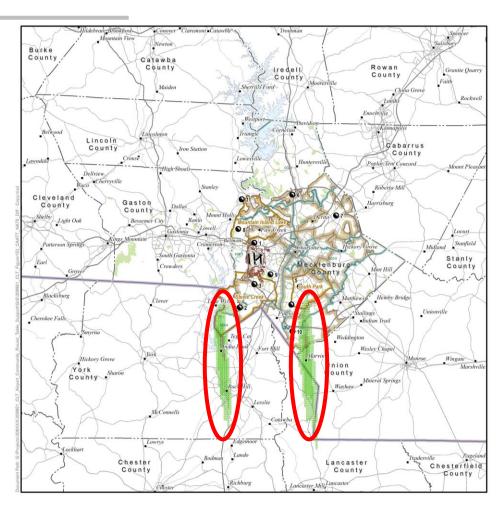


Alternative: Raise Altitudes at CAATT/EPAYE/AAIRE/JRDN/CEDOX/VALLL/LEEKS



Number of Noise Events Above 70 dB (N70) Difference – Raised Altitudes on All Downwind Arrivals Compared to Baseline

N70 Difference Interval (Events)	Count of Grid Points / % Change	Count of Population / % Change	
Less than -75	0 / 0.0%	0 / 0.0%	
-75 to -25	44 / 0.1%	6,564 / 0.3%	
-25 to -10	314 / 0.8%	41,057 / 1.9%	
-10 to -1	454 / 1.2%	44,739 / 2.0%	
-1 to 1	37,487 / 97.9%	2,091,142 / 95.8%	
1 to 10	0 / 0.0%	0 / 0.0%	
10 to 25	0 / 0.0%	0 / 0.0%	
25 to 75	0 / 0.0%	0 / 0.0%	
Greater than 75	0 / 0.0%	0 / 0.0%	
Total	38,301 / 100.0%	2,183,561 / 100.0%	





Number Above Lmax 70 Grid Analysis January 1, 2018 through December 31, 2018 CLT Operations with Increase in Attitude at CAATT and EPAYE Compared to Baseline Operations

-	Runway		
1	Airport Boundary (Approximat	te)	
x D	ifference Grid		
	-75+		
	-25 to -75		
	-10 to -25		
	-1 to -10		
	-1 to 1 (No Color)		
	1 to 10		
	10 to 25		
	25 to 75		
	75+		
-	State Boundary		County Boundary
-	Highway		Minor Roads
-	Major Roads		Railroad
1	Charlotte Regions		
	City Council District Boundarie	es	
	County Commission Districts		
	Water / Stream		Open Space
	Landmark Locations		
	1 West Mecklenburg High		7 UNCC
	2 Southwest Middle School		8 US Whitewater Center
	3 Olympic Community High 4 Quail Hollow Middle School		 Renaissance Park Ballantyne
	5 South Park Mall	501	11 Mountain Island Lake
	6 NorthLake Mall		TT Mountain Island Earo
is, F	urce: Mechlenberg County GIS, Noven Roads); Gaston County GIS, Novembe	v 2018, (P	(Parks, Community Points, Lakes, arks, Community Points): York County In 2019, (County Boundary, City

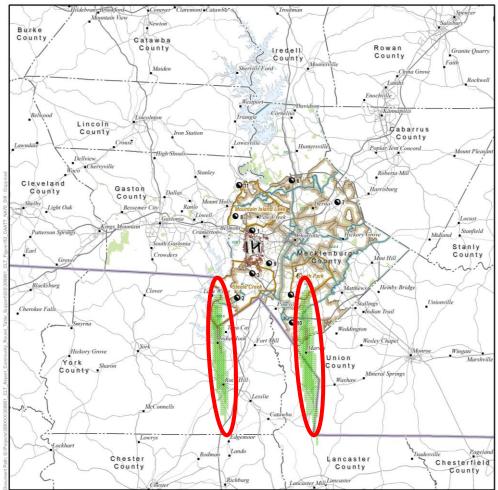
hmmh

- 812 grid points (2.1%) /92,360 people (4.2%) would experience fewer events above 70 dB Lmax with increased arrival altitudes
- 0 grid points (0.0%) / 0 people (0.0%) would experience more events above 70 dB Lmax with increased arrival altitudes

Summary of FAA Alternative

Raised Altitudes on All Downwind Arrivals

- Eliminates events above 70 dB (N70) along downwind leg of north flow arrivals (no such N70 events in south flow)
 - Nearly 100,000 people could experience fewer events above 70 dB from these aircraft arrivals (see area of change in map to the right)
- Some aircraft will proceed further north/south before turning onto final approach
 - No area is expected to experience noise above 70 dB from these operations until aircraft are on final approach
 - Some areas expected to experience additional overflights, but not above 70 dB
 - This may result in additional noise events above 70 dB on final approach with those aircraft that proceed further north/south (though modeling showed no increase expected)





Discussion

Raise arrival altitudes on all arrival downwind legs

- north and south flow
- east and west of CLT

