## CLT Baseline Evaluation Results

For ACR Review, Understanding and Acceptance

April 17, 2019



#### HMMH-Recommended Evaluation Metrics

- Provide baseline analysis results at the CLT ACR analysis grid points for calendar year 2018 aircraft operations:
  - Population
  - Maximum sound level (Lmax)
  - Number of events above Lmax of 70 dB (N70)
  - Day-Night Average Sound Level (DNL)
  - Counts of grid point ranges in each of the four categories above (number of grids in each range/color)
  - Population exposed to various Lmax, N70, and DNL ranges



### Calendar Year 2018 Baseline Operations Grid Point Analysis

Analysis requested by the ACR at the 2019 February and March ACR meetings





### Calendar Year 2018 Baseline Operations Grid Point Analysis Summary

- Obtained current land use and population data within the study area
- Obtained and modeled full year 2018 CLT flight tracks and aircraft identification data using AEDT to obtain noise metrics baselines
- Plotted noise and population data over land use base map
- Notes:
  - The FAA considers all land uses to be compatible with aircraft-related DNL levels below 65 dB
  - Most residential and other noisesensitive land uses are considered by FAA to be incompatible with aircraft-related DNL levels above 65 dB with exceptions
  - Land use is constantly changing, and base map may not reflect all recent land use changes or recent development





#### 2010 US Census Population Levels at Grid Analysis Points

Population Interval	Count of Grid Points
0	563
1-200	4,460
201-400	1,132
401-600	185
601-800	39
801-1000	16
Greater than 1,000	5
Total	6,400
Total Grid Population	726,052



# Noise Analysis Lmax Analysis (Lmax 70 dB and greater): 2018 CLT Baseline Operations

	Population
355	15,902
4,067	507,914
1,594	171,281
306	27,181
58	3,624
13	150
3	0
3	0
1	0
6,400	726,052
	Grid Points         355         4,067         1,594         306         58         13         3         13         3         13         3         13         3         13         3         58         13         3         13         3         13         3         1         6,400



# Noise Analysis Number of Events Above Analysis (N70): 2018 CLT Baseline Operations

N70 Interval	Count of Grid Points	Count of Population
25 or Less	3,594	431,497
26-50	907	105,143
51-75	431	56,587
76-100	310	29,841
101-150	330	37,893
151-200	281	24,375
201-300	218	22,103
301-400	155	14,032
401-500	86	4,159
Greater than 500	88	422
Total	6,400	726,052



# Noise Analysis DNL (DNL 45 dB and greater): 2018 CLT Baseline Operations

DNL Interval	Count of Grid Points	Count of Population
Less than 45	3,909	480,437
45.1-50.0	1,401	148,901
50.1-55.0	614	62,403
55.1-60.0	278	27,043
60.1-65.0	121	6,681
65.1-70.0	49	579
70.1-75.0	20	8
Greater than 75	8	0
Total	6,400	726,052



### Discussion



### HMMH Request for Discussion of ACR Slate Recommendations



### ACR Adopted 2019 Slate of Recommendations



#### HMMH Request for Discussion of Slate Recommendations

- Prior to continuing with the individual analysis of slate recommendations, HMMH requests additional discussion of the recommendation including such items as:
  - The ACR's preferred priority for evaluating each recommendation
  - Technical clarifications on how each recommendation is intended to be implemented by the ACR
- The following matrix presents the ACR adopted slate recommendations and items for which HMMH is seeking additional discussion and clarification from the ACR



#### HMMH Requests for Clarification on ACR Slate Recommendations

ACR Slate Recommendation	ACR Priority	HMMH ACR Requests for Discussion/Clarification	Note
Utilize altitude-based turns for departures	To Be Determined	<ul> <li>Should altitude based turns be utilized for South Flow and North Flow departures?</li> <li>Should departure aircraft turn at the same altitude under North Flow as South Flow?</li> </ul>	Requires coordination with FAA on headings to be used and feasible altitudes
Utilize divergent departure headings	To Be Determined	<ul> <li>Should divergent headings be used for South Flow departures in a similar manner as done for North Flow departures?</li> </ul>	Requires coordination with FAA on headings to be used and feasible divergent departure heading locations
Modify use of departure profiles	To Be Determined	• None	None



#### HMMH Requests for Clarification on ACR Slate Recommendations

ACR Slate Recommendation	ACR Priority	HMMH ACR Requests for Discussion/Clarification	Note
Utilize alternating downwind arrival rails	To Be Determined	• None	Requires coordination with FAA on feasibility for implementation and potential associated airspace changes
On south departures, delay initial aircraft turns off Runway 18L and 18C	To Be Determined	<ul> <li>Should delayed turns also be considered for North Flow departures?</li> </ul>	Requires coordination with FAA on feasibility of turn locations and procedure designs that would facilitate delayed turns
On south departures, change the headings of initial aircraft turns off Runway 18L and 18C	To Be Determined	<ul> <li>Should initial headings also be changed for North Flow departures?</li> </ul>	Requires coordination with FAA on departure headings to be used
Remove two-mile departure restriction	To Be Determined	• None	Requires coordination with FAA on location of aircraft departure turns within two-miles and headings to be used
Utilize Continuous Descent Approaches (CDAs)	To Be Determined	• None	Requires coordination with FAA and Industry on percentage of arrival operations that would use CDA's and aircraft equipage for ability to execute CDA procedures

### Discussion

CLT Technical Consultant to the ACR

