

Dulles International Airport Aircraft Noise Contour Map Update Project Briefing

Review and Assessment for Fairfax County, VA

Prepared by Johnson Aviation, Inc.

Avion Consultants, LLC

ATAC Corporation

Purpose

- Provide expertise to review Ricondo Report to MWAA
- Determine if Report follows industry standards for noise contours
- Advise on potential amendments to County Comp Plan, Zoning Ordinance and policies
- Provide guidance on MWAA process vs. FAA's Part 150 process
- Compare Dulles Airport Land Use process to similar airports

Tasks

1. Peer review Ricondo Report
2. Compare Dulles Ultimate Noise Contours to typical Part 150 process
3. Identify other U.S. communities using 60 DNL to limit residential
4. Compare Dulles existing aircraft operations to Ultimate forecast
5. Identify GPS navigation effects on concentrating Dulles flight paths

Team

Nick Johnson – Johnson Aviation, Inc.

- 32 years airport land use and development

Ron Seymour – Avion Consultants LLC

- 28 years airport noise abatement; land use planning

Bill Keller – ATAC Corporation

- 25 years airport/airspace planning; environmental



Findings

- Ricondo noise analysis is well-documented and consistent with FAA regulatory guidance
- Ultimate noise contours methodology consistent with original (1993) approach adding changes to modern aircraft fleet and GPS navigation
- Ultimate noise contours methodology used only for Dulles and Denver (only two “green field” major airports in 60 years)
- 60 to 90-year planning horizon
- Based on projected annual operational capacity – not demand
- Most large hub airports use FAA’s Part 150 process to identify most impacted communities for noise mitigation measures (5 to 20-year demand horizon)

Findings (con't)

- Five large hub airports are actively using 60 DNL for residential notifications
- Dulles Ultimate operational capacity of existing four runways can handle demand for the next 60 to 75 years
- Dulles Ultimate operational capacity of planned five runways can handle demand for the next 80 to 90 years
- GPS navigation accuracy can reduce flight path dispersion and reduce overflight for some while increasing overflight for others

Aircraft Operations Comparison

Table 1.1
Aircraft Operations Comparison

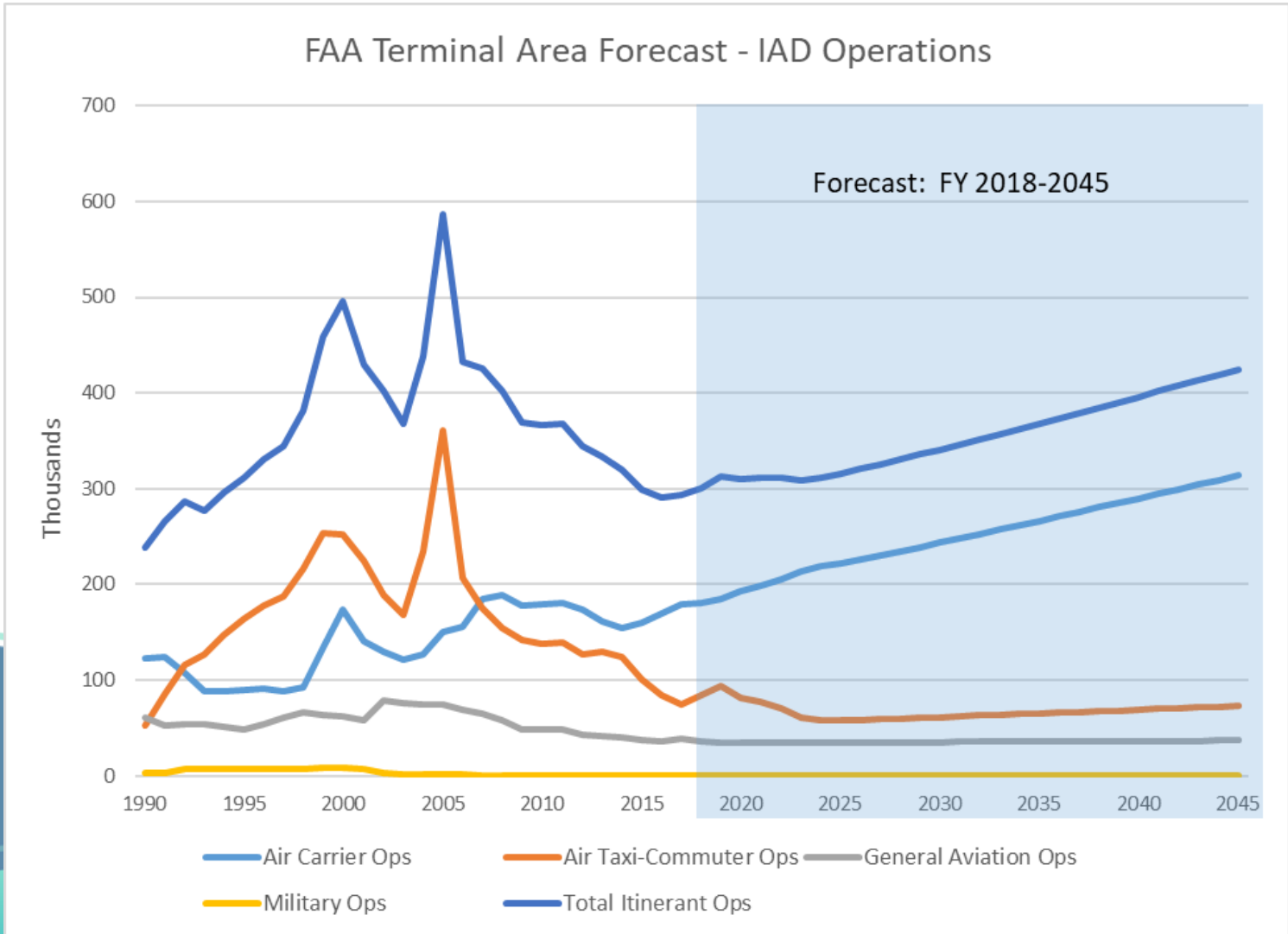
	2017 Actual	1993 Original Five-Runway ASV	Four-Runway ASV	Five-Runway ASV
Total Operations	294,190	740,000	900,000	1,004,000
AAD Operations	806	2,027	2,466	2,751
Increase over 2017	-	251%	306%	341%

Aircraft Size Category Comparison

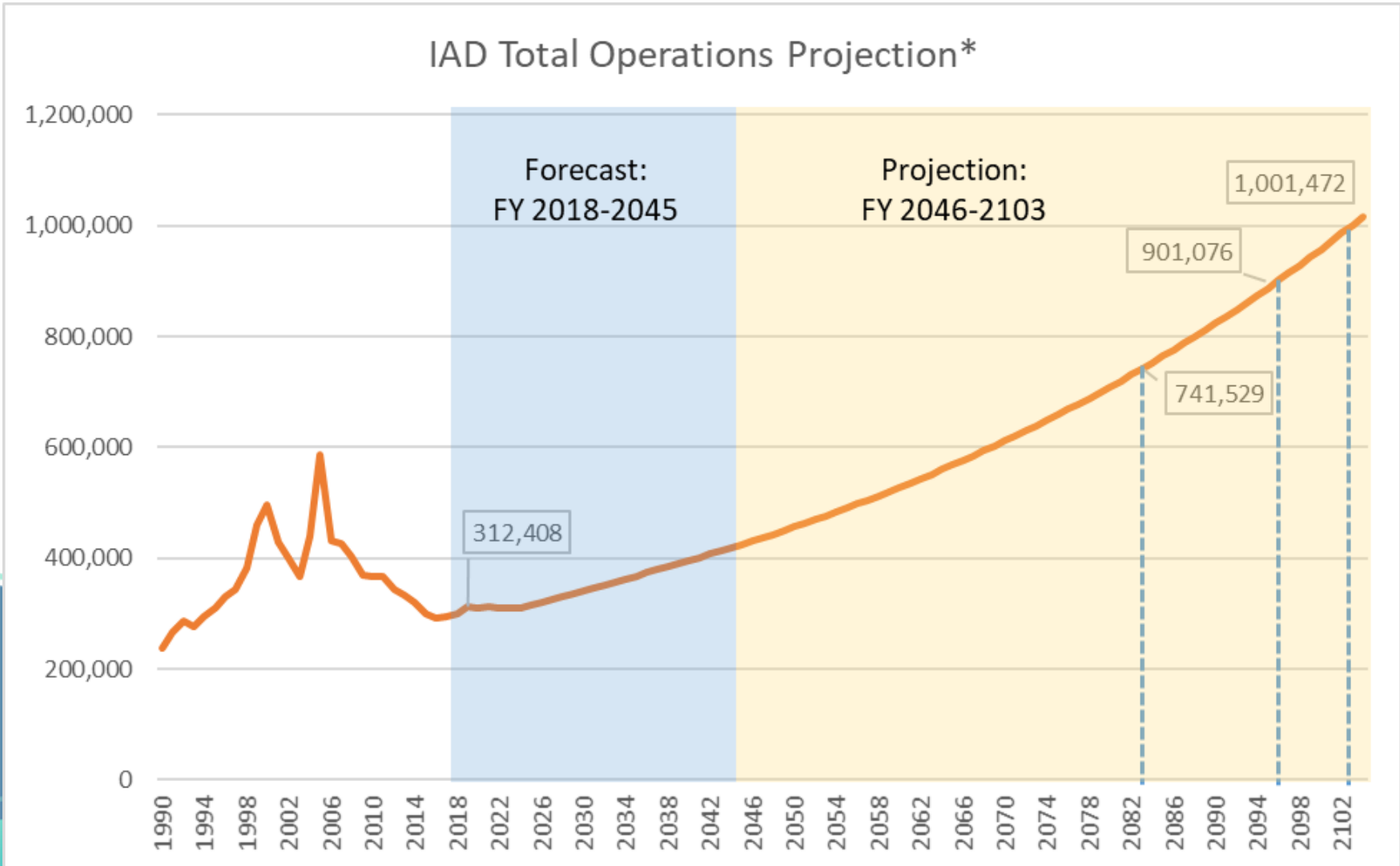
Table 1.2
Aircraft Size Category Comparison

Aircraft Category	2017 AAD	Four-Runway ASV	Five-Runway ASV
Super Heavy Jet	1%	1%	1%
Heavy Jet	10%	12%	12%
Large Jet	67%	74%	74%
Small Jet	13%	7%	7%
Turbine Propeller	8%	7%	7%
Piston Propeller	1%	0%	0%
Total	100%	100%	100%

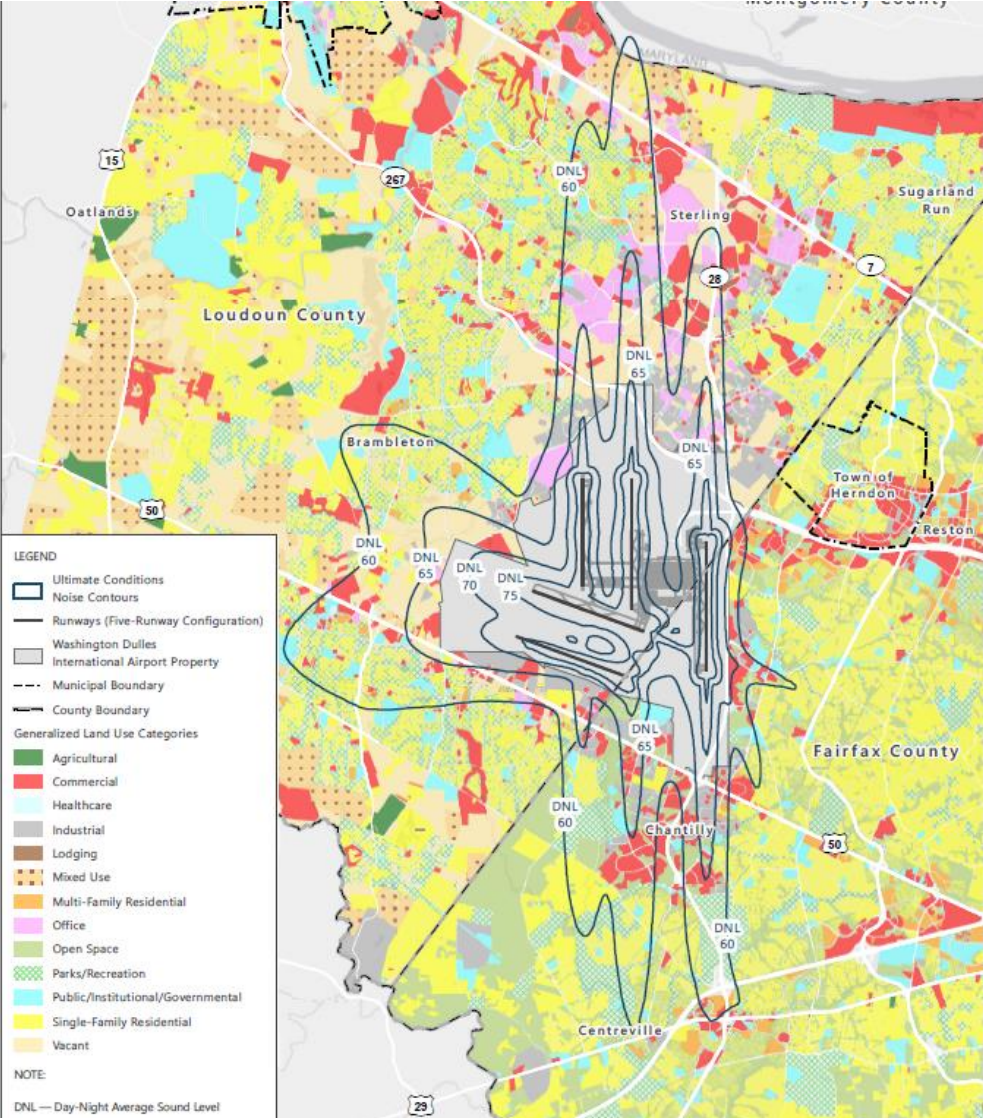
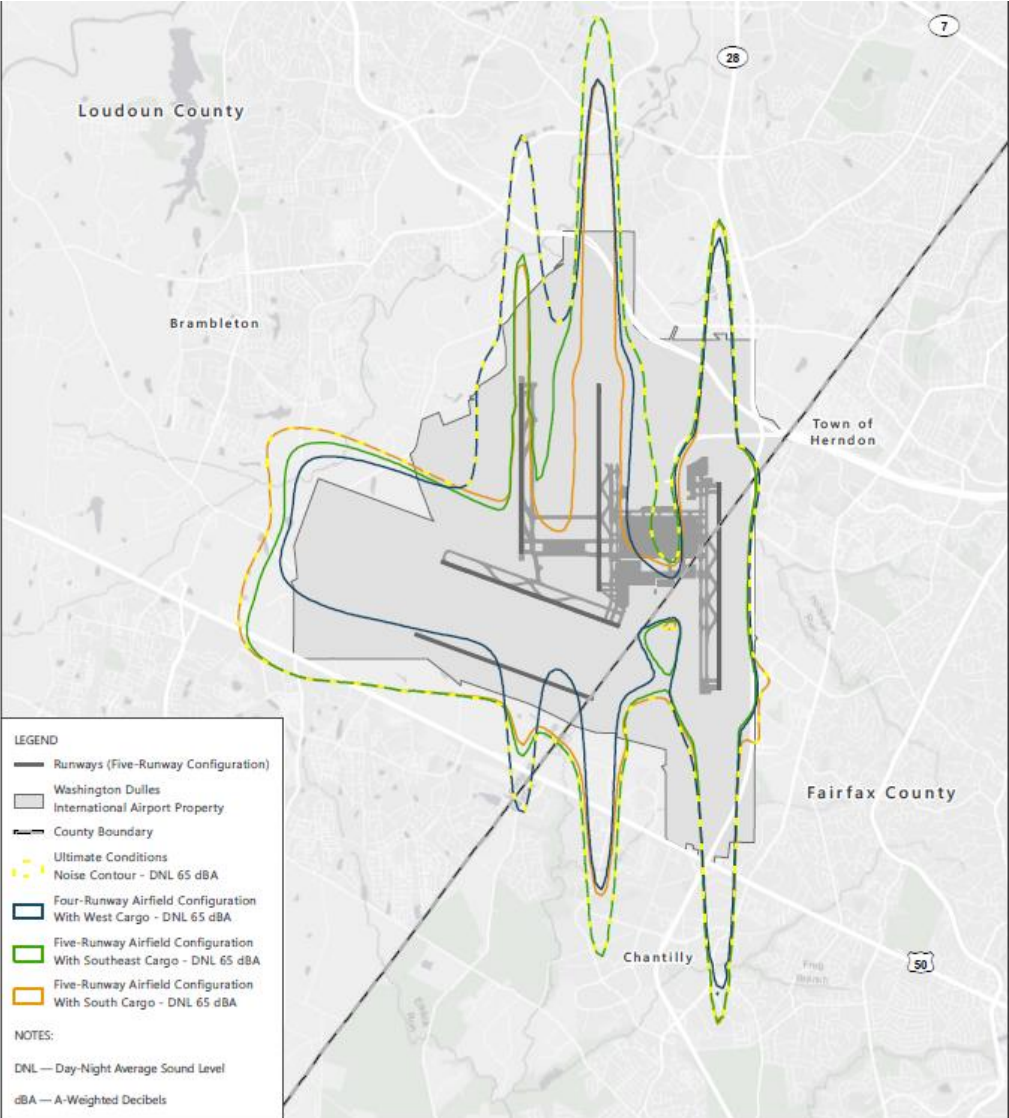
FAA Terminal Area Forecast – Dulles Ops



Dulles Total Operations Projection



Noise Contours



Projected Ultimate Noise Contour Change

Legend

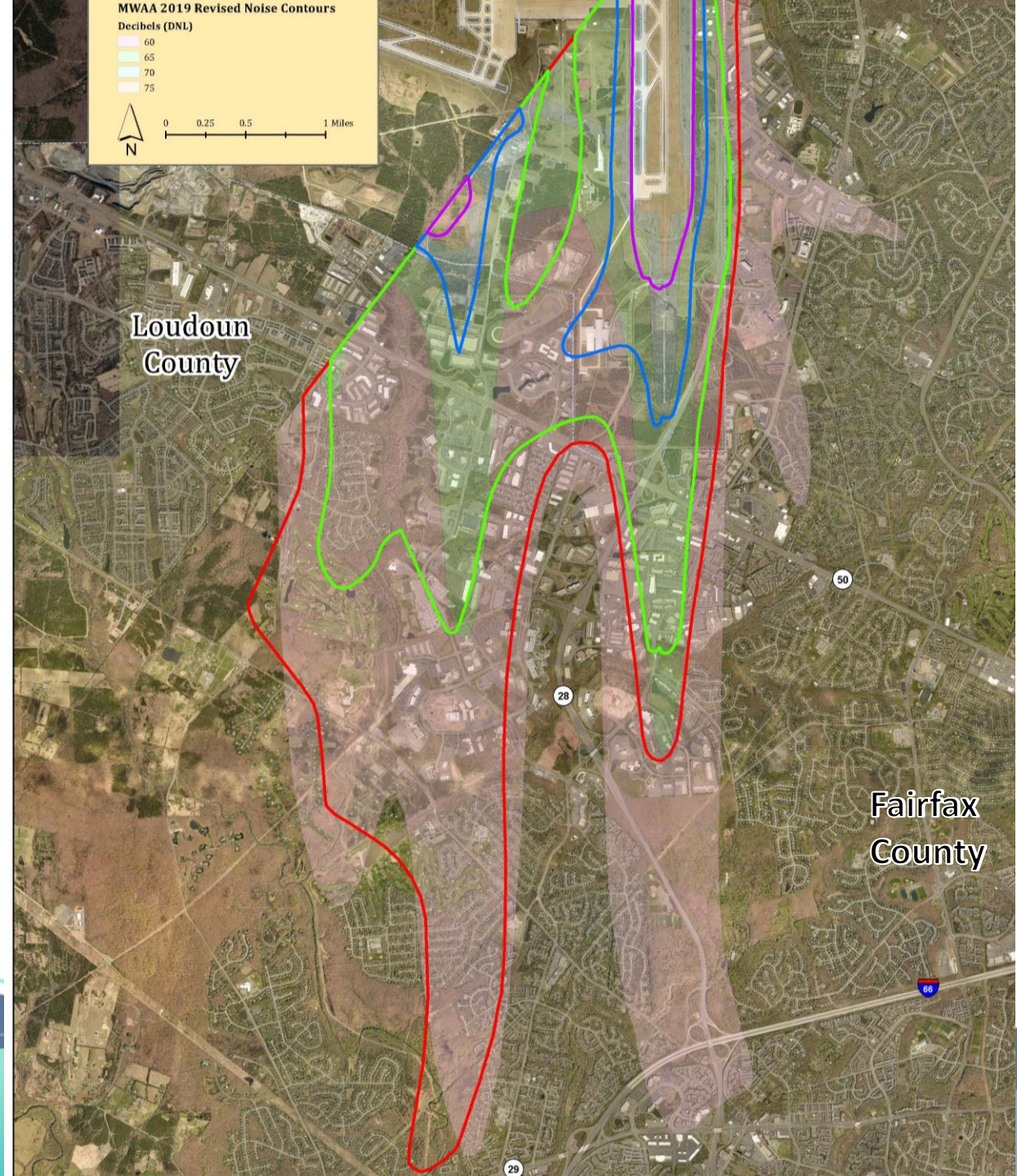
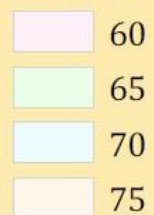
Fairfax County Current Noise Contours

Decibels (DNL)



MWAA 2019 Revised Noise Contours

Decibels (DNL)



Recommendations

1. Consider the use of MWAA Ultimate 65 DNL contour + County's NLR criteria for new residential
2. Analyze 60-65 DNL area to permit residential with restrictions
3. Consider noise notification for concentrated noise overflight areas within 60-65 DNL area (like Land Unit J notifications)
4. Work with MWAA on nighttime (10 p.m.-7 a.m.) noise abatement procedures and preferential runway use program as airport development is considered

Discussion

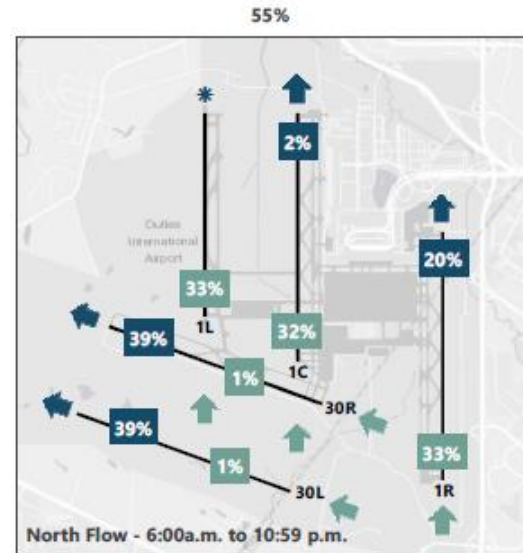
Runway Utilization (2017 versus projected)

Table X						
Runway Operating Configuration Comparison - Average Annual Day (AAD)						
2017 Configuration	AAD Operations			AAD Share		
	Day	Night	Total	Day	Night	Total
North Flow	404	67	471	50%	8%	58%
South Flow	284	51	335	35%	6%	42%
Total	688	118	806	85%	15%	100%
4-Runway Configuration	AAD Operations			AAD Share		
	Day	Night	Total	Day	Night	Total
North Flow	1,184	173	1,356	48%	7%	55%
South Flow	986	123	1,110	40%	5%	45%
Total	2,170	296	2,466	88%	12%	100%
5-Runway Configuration	AAD Operations			AAD Share		
	Day	Night	Total	Day	Night	Total
North Flow	1,320	193	1,513	48%	7%	55%
South Flow	1,100	138	1,238	40%	5%	45%
Total	2,421	330	2,751	88%	12%	100%

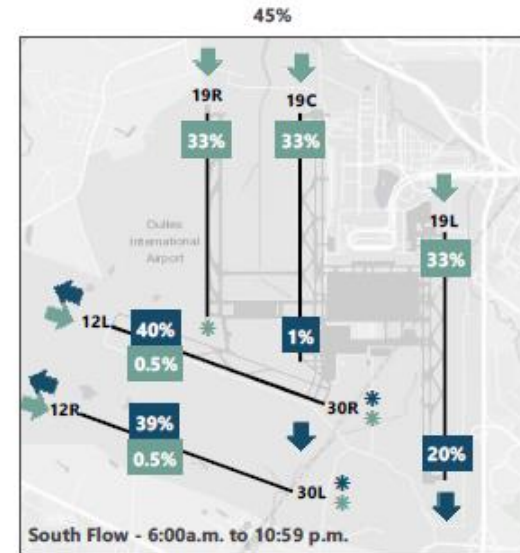
Source: Ricondo & Associates, Inc., Harris Miller Miller & Hanson, Inc., Washington Dulles International Airport Aircraft Noise Contour Map Update, May 2019.

Percent Ultimate 5-Runway Utilization

88% Day

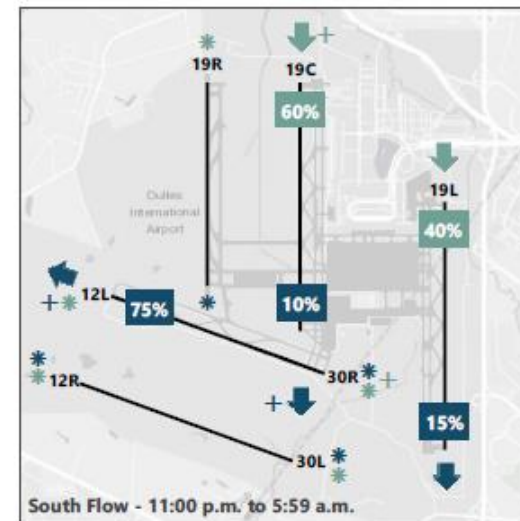
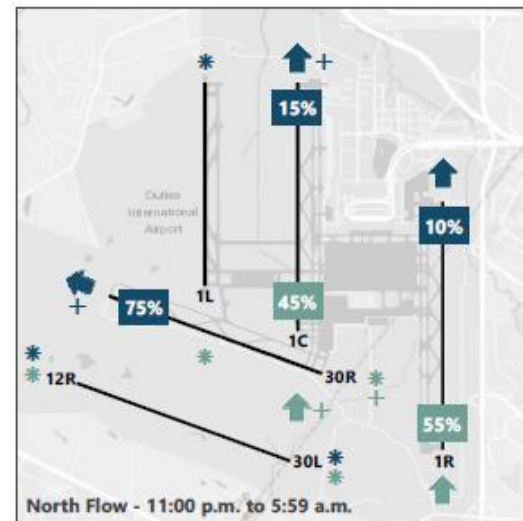


55% North Flow



45% South Flow

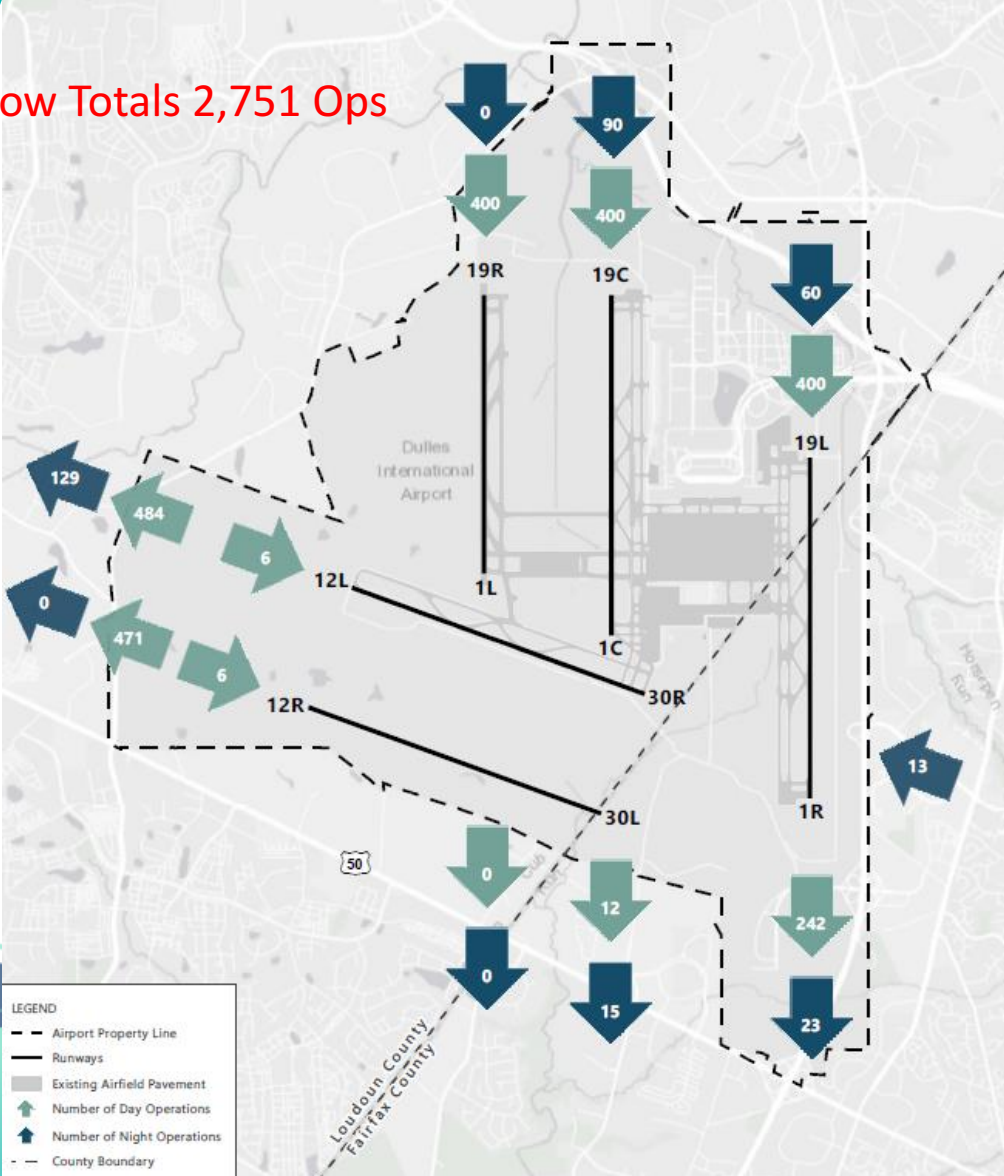
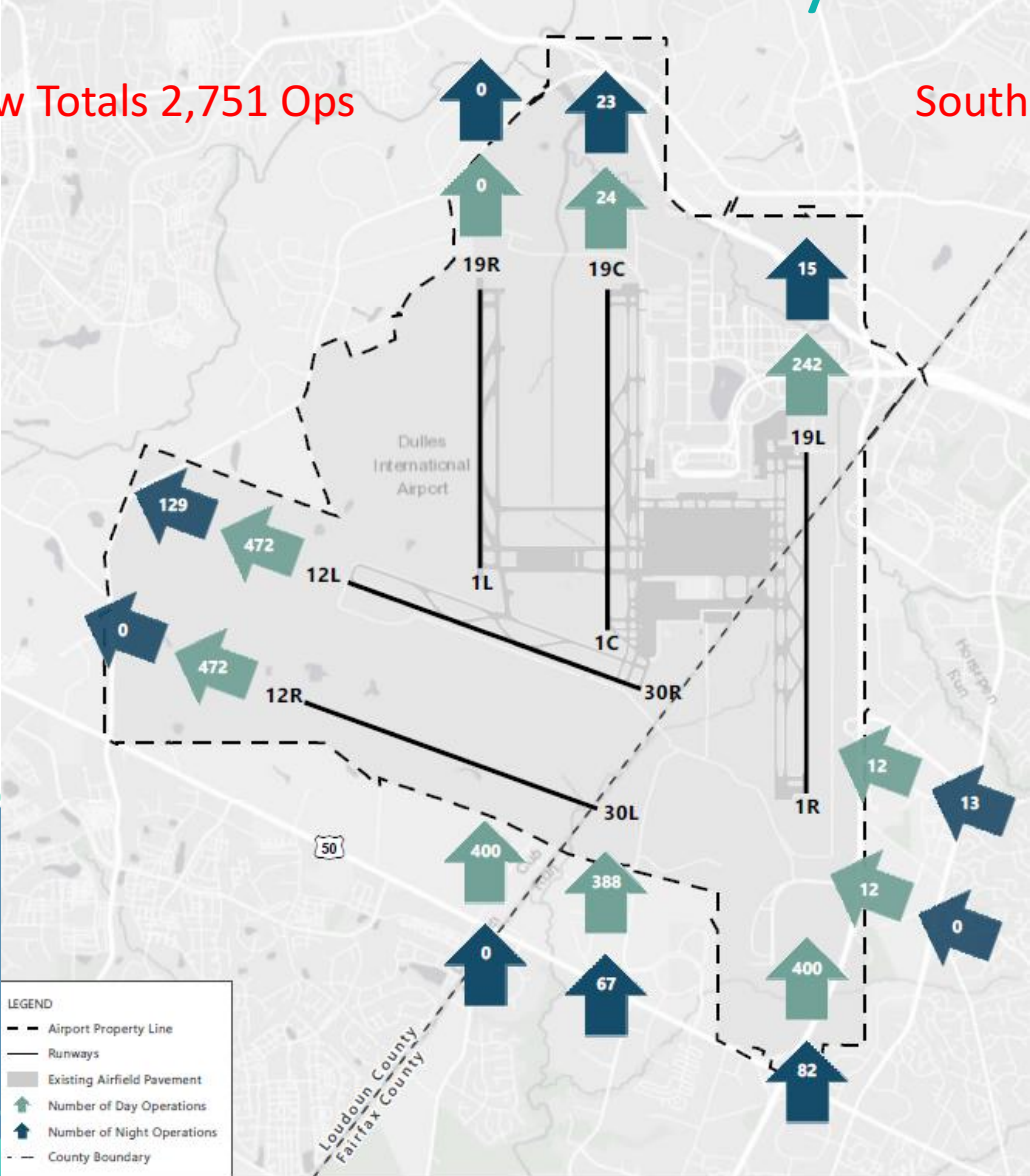
12% Night



Ultimate 5-Runway Daily Operations

North Flow Totals 2,751 Ops

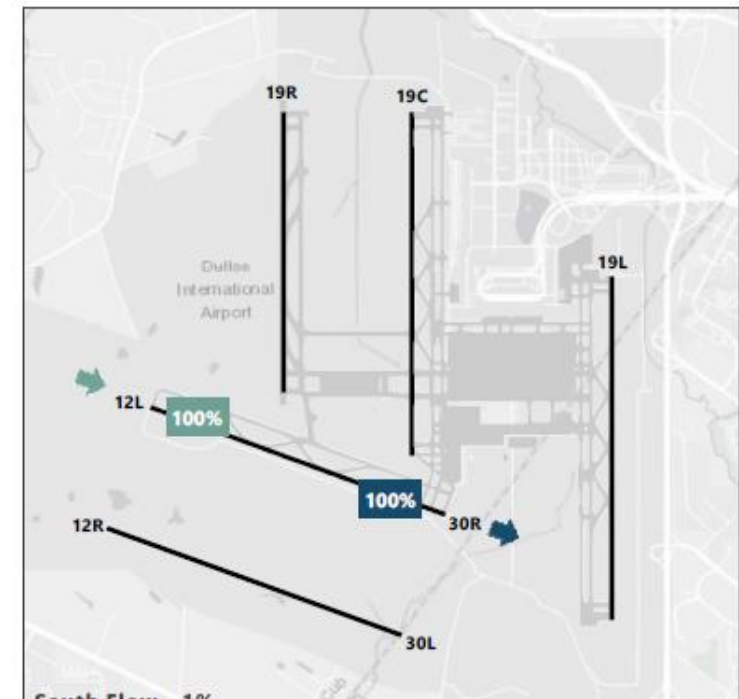
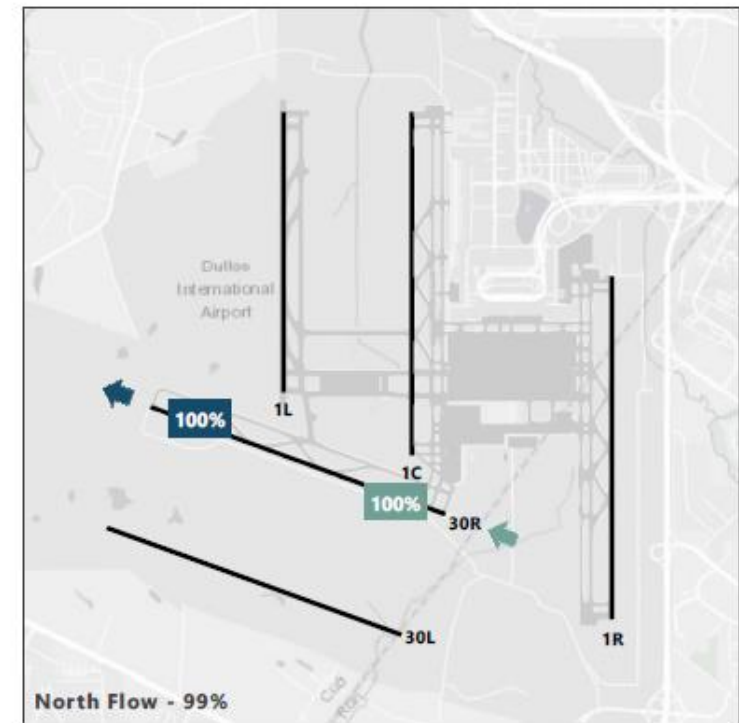
South Flow Totals 2,751 Ops



Projected Night Operations

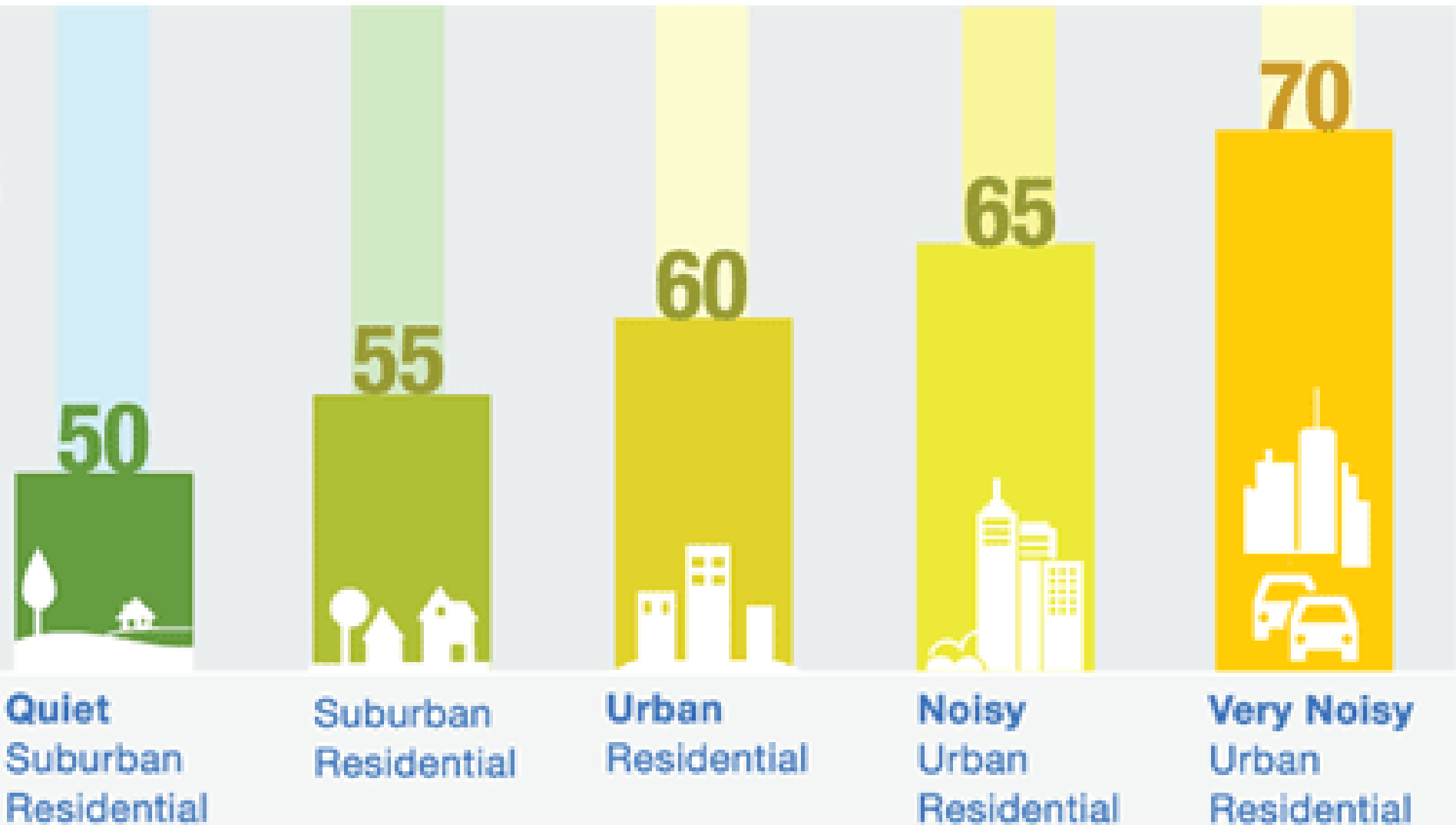
Additional Night Operations Include:

- 24 nighttime cargo operations
- 208 nighttime passenger operations
- 232 total additional daily operations



DNL VALUES IN RESIDENTIAL AREAS

AVERAGE DNL IN dB

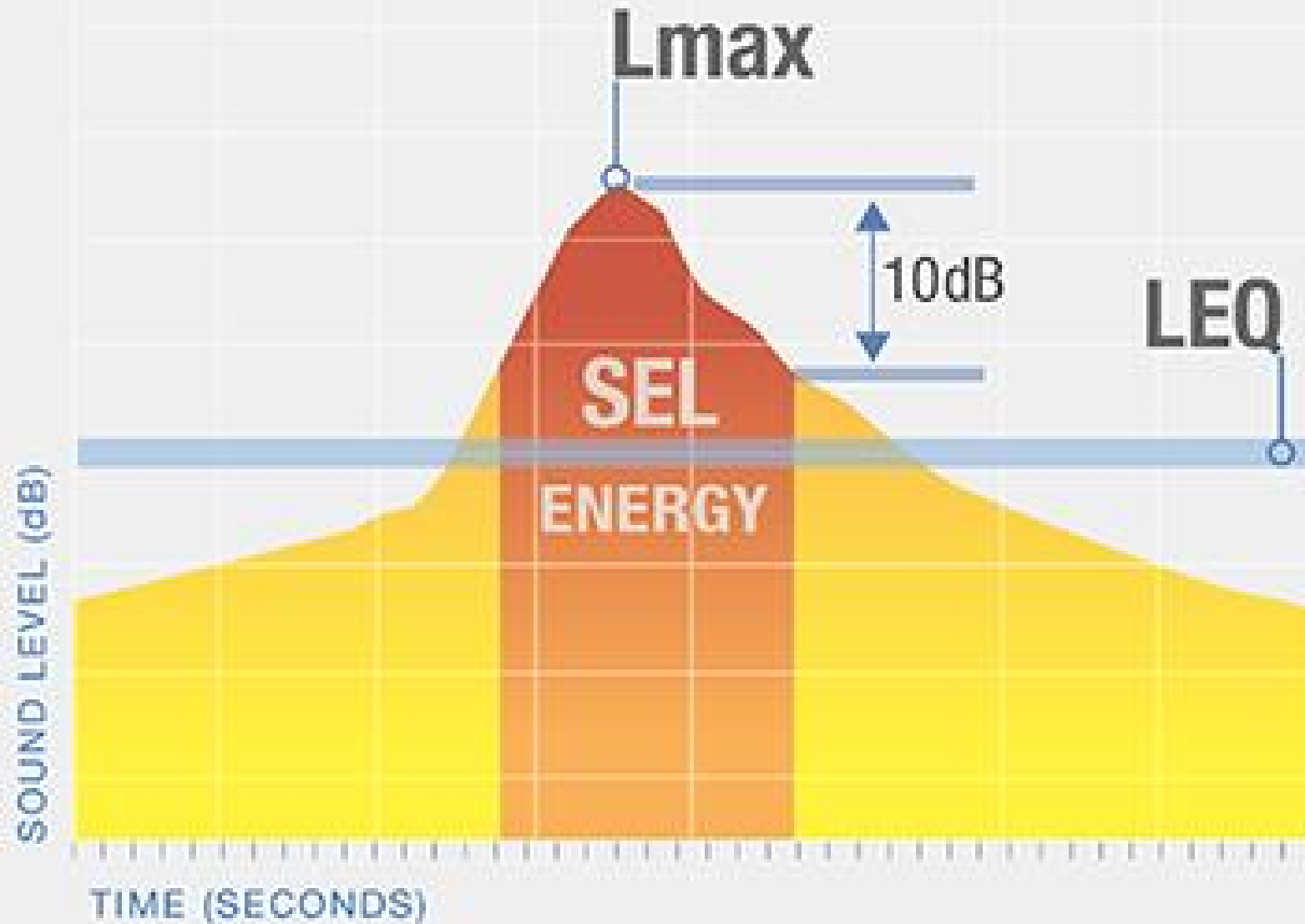


Source: Federal Agency Review of Selected Airport Noise Analysis Issues, Federal Interagency Committee on Noise, August 1992.

COMPARATIVE NOISE LEVELS (DBA)



SOUND PRESSURE LEVEL (SPL, dB) AT ONE MICROPHONE LOCATION

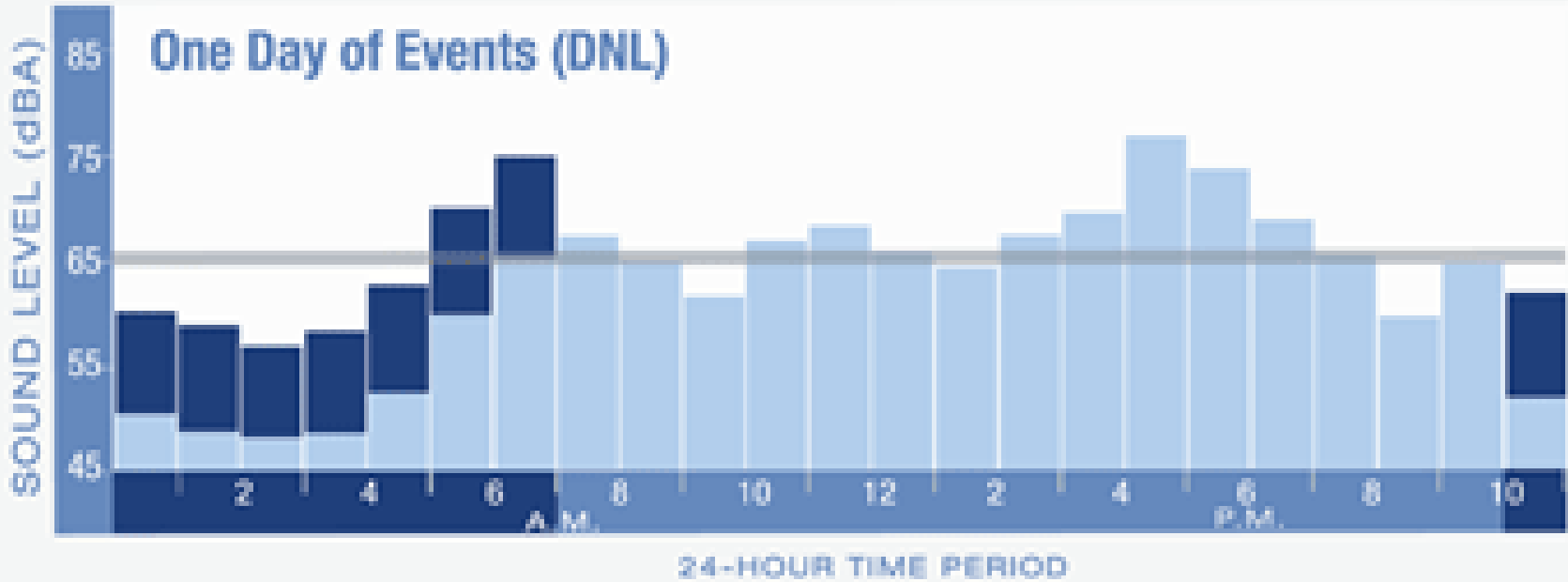


SEL Value

1 SECOND

DNL - DAY-NIGHT AVERAGE SOUND LEVEL

- DNL
- 10-dB Nighttime Penalty
- Hourly LEQ



EQUIVALENT OPERATIONS FOR DNL = 65

1 EVENT/DAY SEL 114.4 dBA = DNL 65



10 EVENTS/DAY SEL 104.4 dBA = DNL 65



100 EVENTS/DAY SEL 94.4 dBA = DNL 65

