

Protect Dulles Airport!¹
(Opposition to PA 2020-CW-3CP)

Airport Noise Impact Areas, Contours, the Board’s Untenable July 21, 2020
Land Use Policy Committee Meeting, and the County’s Commitment to Dulles Airport

Clyde A. Miller²
3436 Skyview Terrace
Falls Church, VA 22042

Contents³

1.	Introduction.....	2
2.	Purpose of the Paper.....	2
3.	Dulles Is a Uniquely Valuable National Asset	3
4.	Background.....	3
5.	Johnson Aviation Report Recommendations	4
6.	Aircraft Noise Affects Residents and Constrains Airport Development and Growth.....	5
7.	FAA Neighborhood Environmental Survey (NES) and I66	6
8.	Noise Mitigation and Prevention	8
9.	Dulles and Denver Int’l	9
10.	Understanding MWAA’s 2019 Noise Map and Contours.....	9
11.	Dulles Planning Is Not “Different” from That of Other Large Hubs.....	10
12.	Long-Range Planning - Comment on the Johnson Report	11
13.	July 21, 2020 LUPC Meeting Issues	13
13.1.	Staff’s Recommendation to Not Adopt 2019 Contours.....	13
13.2.	Residential Development Between the 60 & 65 DNL Contours	14
13.3.	Invalid Plan Amendment.....	15
14.	First Principles	16
15.	Conclusion and Recommendations	16
	Appendix.....	18
	References.....	21

¹ This paper was submitted to the Board of Supervisors and the Planning Commission on 9 Mar 2022.

² The author retired from FAA after 28-years service as a senior executive in R&D. He managed the FAA’s program to develop an aircraft-based midair-collision avoidance capability (TCAS) now installed in air carrier aircraft worldwide. After retirement from FAA, he managed a \$9m, three-year program funded by TSA to evaluate at 20 air carrier airports the application of new technologies to improve airport security capabilities. He is a past member of American Association of Airport Executives.

³ The recommendations on pg 17 were revised and expanded on 10 Mar 2022.

1. Introduction

On 7 May 2019, the previous Board of Supervisors adopted a controversial plan amendment, PA 2018-III-DS1 (Westfields), which recommended new residential and retail uses in Land Unit J of the Dulles Suburban Center adjacent to Dulles airport. The amendment also recommended that residential units be allowed inside the 60 DNL contour of the Dulles Noise Impact Area in Land Unit J, abandoning a County policy there that had protected residents and the airport from consequences of aircraft noise for the preceding 34 years.

In the 7 May 2019 hearing, supervisors approved Sully District Supervisor Smith's follow-on motion that staff gather information, possibly engage a consultant, and return to the Board in a Land Use Policy Committee (**LUPC**) meeting with recommendations regarding adopting the updated (2019) Dulles noise contours developed by Metropolitan Washington Airports Authority (**MWAA**). [1]

The LUPC meeting occurred on 21 July 2020. Staff briefed two proposals. First that the 2019 contours should not be adopted, and second that residential development should be allowed inside the 60 DNL contour everywhere (i.e., not only in Land Unit J). The purpose of subject plan amendment, PA 2020-CW-3CP, is to amend the Comp Plan to incorporate the second recommendation.

For whatever reason, staff's briefing was thoroughly misleading on the central points and omitted expert opinion that disagreed with staff's proposals. It provided no pertinent argument for not adopting the 2019 contours while never mentioning the advice of the County's consultant and other aviation experts that the 2019 contours should be adopted. On the question of residential development inside 60 DNL, staff again ignored the advice of their consultant. This paper recommends that the County should proceed along the lines the consultant recommended, namely adopt the 2019 contours and develop effective restrictions to apply to any residential development between 60 & 65 DNL to manage noise impacts. **The Board's 28 July 2020 authorization of subject plan amendment, PA 2020-CW-3CP, was based on false premises. The amendment should not be adopted; it should be withdrawn.**

2. Purpose of the Paper

The Fairfax County Board of Supervisors plays a crucial role protecting Dulles airport from encroaching noise-sensitive land uses. The Board's attention to and success in fulfilling this role over the past 60 years is evident today in the airport's ability to operate essentially unencumbered 24x7 throughout the year. Lately, over the past few years, there is evidence that the Board's support of the airport is lacking. Comments in Board discussions of Dulles suggest that Westfields deserves supervisors' attention, the airport can take care of itself. But it cannot. If supervisors allow residential development to choke the airport, the damage will be permanent.

This paper is an effort to make clear the importance of the Board's role protecting Dulles, how County policy protects the airport, and concerns about current efforts to allow intense residential development nearby without consideration of consequences for Dulles. Misconceptions and omissions that predominated the 21 July 2020 LUPC meeting now complicate constructive dialog on the issues. Hopefully, this paper will correct some misunderstandings.

The paper is intended to be read on a computer. Access to references is simplified by opening two copies of the paper, one behind or beside the other. With one copy open to the references and the other for reading, it is easy to go back and forth. Every reference includes an Internet link to the document or video recording. Entries in the Table of Contents are links to sections of the paper. To return to the top of the document, type Opt_Home or Cntl_Home.

Regrettably, the paper is long; but there is much that needs to be said. I hope supervisors finds the information useful.

3. Dulles Is a Uniquely Valuable National Asset

While Board discussions sometimes have spoken of the importance of Dulles to the economy of Fairfax County, it's not clear that the value of the airport beyond Fairfax County, to the Northeast Region and even to the Nation, is adequately appreciated. Given its surplus capacity; its ability to increase passenger and cargo operations to meet future needs; and its connection to Washington, D.C., Northern Virginia, and Maryland via the Silver Line; Dulles offers the region an opportunity to become a major global business and transportation center. *Section 4.1 Global, National, Regional, and Metropolitan Importance* on pages 4-1 thru 4-4 of [2] provides a concise summary of the enormous economic value of the airport.

4. Background

Figure A1 in the Appendix shows the land units within the Dulles Suburban Center (**DSC**) for which the Comprehensive Plan now recommends residential development. The noise contours shown in the figure were produced by a 1993 MWAA airport capacity analysis. In today's Comprehensive Plan, residential development explicitly is not recommended inside the 60 DNL contour, which is the contour on the outside edge of the shaded Airport Noise Impact Area.⁴ [3, pg 19-23]. This restriction is the foundation of the County's **Dulles Noise Protection Policy**. It protects residents from moving into an area where many would find aircraft noise highly annoying, and it protects the airport against a deluge of noise complaints from residents weary of noise. Complaints about aircraft noise can lead local jurisdictions to petition airports to curtail operations and plans for growth, thereby compromising the economic future of both the airport and the community it supports. Witness the situation at Washington National today.

On 19 April 2019, John Potter, President and Chief Executive Officer of MWAA, sent a letter to Board of Supervisors Chairman Sharon Bulova stating that the long-anticipated update of the 26-year-old 1993 noise contours had been delivered to County staff. Potter formally requested that the County incorporate the updated (2019) contours into its planning policies prior to considering any development proposal that might recommend noise-sensitive uses that conflict with the new contours. [4] With the exception of the discussion in the untenable 21 July 2020 LUPC meeting, the Board is yet to consider adopting the 2019 contours. As shown in Figure A3, the 2019 contours, in particular the 65 DNL contour, extend into Land Unit J (Westfields) to a greater extent than the 1993 contours. This is one apparent reason for the Board's refusal to consider adopting the 2019 contours.

⁴ The Noise Impact Area is the land bounded by the 60 DNL contour and the boundary with Loudoun County. This paper uses DNL notation for the more correct DNL dBA, that is, 60 DNL instead of DNL 60 dBA.

On 7 May 2019, the Board adopted PA 2018-III-DS1 (herein the Westfields amendment), which recommended redevelopment of Land Unit J of the DSC. The Westfields office park occupies most of the land unit. The plan amendment [5] recommended 4250 additional residential units plus 600,000 sq ft of retail distributed over three village centers and recommended as well that residential units be allowed inside the 60 DNL contour in Land Unit J, abandoning the policy there that had protected residents from aircraft noise and the airport from noise complaints for the preceding 34 years. On 24 Apr 2019, the Planning Commission rejected the proposed amendment by a vote of 4 in favor, 5 opposed, and 2 abstentions with one commissioner absent. [6] The Board adopted the plan amendment by a vote of 6-3-0 with one supervisor out of the room.⁵ [7, pg 39]

Support for the amendment apparently was based principally on rescuing Westfields, a 40-year-old, failing or failed office park on 1100 acres close by the airport in Land Unit J. In hearings, property owners, developers, and their associates were clear about their dire circumstances and desire to transition the property from office to mixed use with emphasis on residential and retail uses. [8] Some supervisors⁶ sympathetic towards Westfields, were markedly less sympathetic, sometimes to the point of dismissive, regarding MWAA's concerns and the concerns of other Washington-area aviation experts, that intense development of Westfields would produce a population of residents suffering highly annoying aircraft noise. With the annoyed residents could come a classical deluge of noise complaints similar to today's situation at Washington National. Among previous supervisors now serving on the Board less one, concern for Westfields appeared to trump concerns for annoyed residents and the consequences for Dulles. [9,10]

Within Land Unit J, two rezonings for residential uses were approved prior to the adoption of the Westfields amendment, and three rezonings for residential uses have been approved since adoption. As of December 2020, Land Unit J contained 704 dwellings. As a consequence of actions by previous supervisors, the total number of dwellings now existing plus those entitled by rezonings is 1867. The total number of dwellings recommended in the Comprehensive Plan, with its Westfields amendment, is 5496, enough housing for 12,600 residents.⁷ [11, pg11]

The next several sections provide information necessary for understanding the deficiencies of the 21 July 2020 LUPC meeting and opportunities for progress. Hopefully, with this information supervisors will support the consultant's recommendations for moving forward. LUPC meeting events and issues are described in Sect 13.

5. Johnson Aviation Report Recommendations

The County engaged Johnson Aviation (**JA**) of Oak Park, California, to provide perspective and expert advice regarding the question of adopting the 2019 contours.

⁵ Among current supervisors: Foust, McKay, Smith, and Storck voted in favor; Herrity opposed; and Gross was out of the room. Among Board members no longer serving, Bulova and Hudgins voted nay; Cook and Smyth voted yay.

⁶ Current supervisors took office on 1 Jan 2020.

⁷ At 2.3 residents per dwelling unit.

The picture on the left side of Figure A2 in the Appendix compares the 1993 and 2019 60 DNL contours. The comparison between 65 DNL contours is on the right side. Figure A3 provides the same comparison for Land Unit J. The two long tongues pointing south on the 60 & 65 DNL contours represent noise generated by aircraft on final approach to the airport's two busiest runways, 1 Right and 1 Center. Aircraft on these approaches pass directly over Westfields in Land Unit J.

Should 2019 contours be adopted? The first recommendation in the JA report is that the Board should adopt MWAAs' 2019 contours. [12, 3rd pg of cover letter] The recommendation is repeated in their 21 July 2020 briefing to the LUPC. [13, Slide 13].

***Report Recommendation 1** – Using the ultimate ASV contours as a guide for land use planning, concentrate on the Ultimate 65 DNL contour and apply the County's existing Noise Level Reduction (NLR) criteria for new residential construction to that area.*

"Ultimate ASV contours" is the term the report uses to refer to the 2019 contours. "Noise Level Reduction criteria" apparently refers to Sect 3103.2 *Airport Noise Impact Overlay District* of the Zoning Ordinance, which provides acoustical performance standards for areas within the Noise Impact Area where noise exceeds 65 DNL.⁸

Should residential development be allowed between 60 and 65 DNL contours? The JA report makes no mention of this question. According to their briefing slides, JA was not tasked to address it. Nonetheless, the second bullet on Slide 13 of the JA 21 July 2020 briefing [13] reads, "Analyze 60-65 DNL area to permit residential with restrictions." Speaking to this bullet, Mr. Johnson said to "look carefully at the area between 60 and 65 DNL to permit residential uses with restrictions. Reasonable restrictions in this area are really important because the area would be impacted." (Emphasis Mr. Johnson's.)

6. Aircraft Noise Affects Residents and Constrains Airport Development and Growth

There is a simple process by which aircraft noise constrains airport operations and prospects for growth. Residents surrounding the airport grow weary of aircraft noise and complain to their local authorities. As the number of complaints grows jurisdictions conclude that something must be done and, through the political process, cause the airport to curtail operations. Opportunities for the airport to grow and thereby support the growth of the local economy are throttled. For decades it has been clear among airport authorities that the worst thing a community can do to its airport is to allow encroaching residential development. The JA report provides examples of deleterious effects of aircraft noise on communities at Denver Stapleton (and subsequent decision to build Denver Int'l) and at Minneapolis-St. Paul Int'l Airport. [12, Sect 3.1 & 3.2].

The need to keep airports separated from residential developments can be inconvenient for developers and others who see opportunity in building close by Dulles. In Northern Virginia we witness the consequences of not separating neighborhoods from Washington National airport in the large number of highly annoyed residents anxious for relief from aircraft noise. During the Board's 21 July 2020 LUPC meeting, Supervisor Storck provided a vivid example of community frustration with aircraft noise at

⁸ This paper uses "Noise Impact Area" as shorthand for "Airport Noise Impact Overlay District," the term used in the Zoning Ordinance.

9 Mar 2022

National and how that frustration naturally looks to the airport to provide relief. [9 at 2hr:29min]. He noted that some residents in his neighborhood are “terrorized” by the noise. Supervisor Storck spoke on the same subject during the Board’s Mar 2019 meeting with MWA. [10 at 1hr:01min]

During the Westfields hearing, four aviation experts attested to the importance of protecting Dulles from encroaching residential development. Three strongly opposed the Westfields proposal. The fourth recommended adoption of the 2019 contours.

- Michael Cooper, Metropolitan Washington Airports Authority [8 at 4hr:54min].
- Richard Del Tos, Metropolitan Washington Airlines Committee [8 at 5hr:00min:55sec].
- Tom Michaels, United Airlines: [8 at 5hr:33min].
- Keith Meurlin, Washington Airports Task Force: [8 at 4hr:44min:40sec].

In 2018 Washington National airport with its single runway and no heavy jet traffic received 76,000 noise complaints. Dulles with four runways and heavy jets receives approximately 1500-2000 complaints a year, a manageable number. [10] If supervisors allow intensive residential development in the Dulles Suburban Center, they should expect their successors to receive annually noise complaints in the 10s of thousands, with the number of complaints increasing as more residential units are approved. How many thousands of annual complaints would it take before the supervisors would be compelled to ask the airport to curtail operations, expansion plans, and its economic future?

The welfare of Dulles International Airport has been entrusted to Fairfax and Loudoun Counties. It’s a big responsibility. A first priority should be to assure that County land use policies effectively protect both residents and the airport from encroaching residential development. We are responsible for returning the airport to our grandchildren undamaged.

7. FAA Neighborhood Environmental Survey (NES) and I66

NES: FAA standards today consider all land uses compatible with noise levels below 65 DNL. This standard derives from noise research conducted in the 1970’s that produced the Schultz Curve, which relates transportation noise levels to the percentage of the population that finds these levels highly annoying.

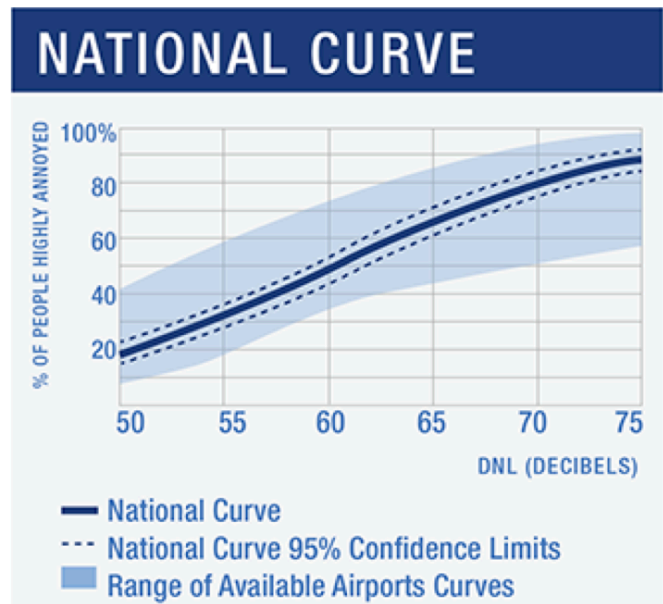
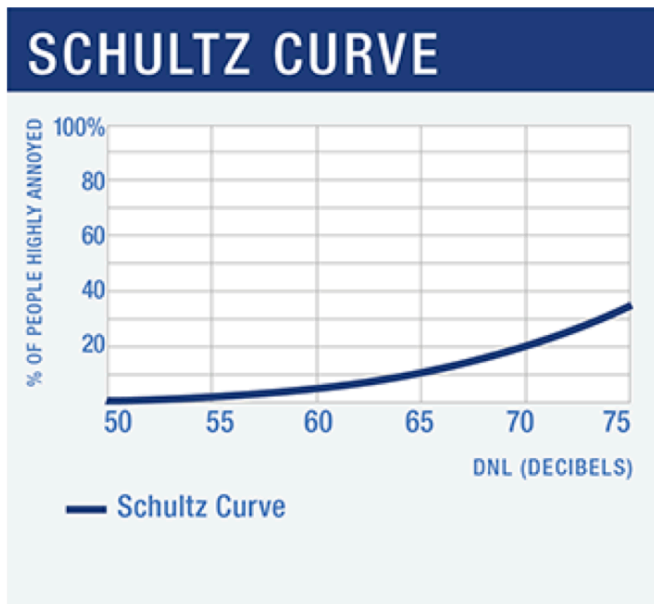
With recognition that the Schultz Curve is based on a 40-year-old social survey of community response to noise and is based on a mix of transportation noise sources, in Oct 2015 the FAA initiated a survey focused specifically on aircraft noise. Surveys were distributed to more than 40,000 individuals living nearby one of 20 representative airports nationwide. More than 10,000 responses were received. On 13 Jan 2021, the FAA issued a notice in the Federal Register inviting public comment on the applicability of the survey results with the understanding that the agency would not consider changes in noise policies until all comments to the Federal Register notice had been reviewed. The FAA received more than 4000 responses to the Federal Register notice. [14]

A principal result of the survey was the National Curve in Figure 1 [15], which, relative to the Schultz Curve, shows a substantial increase in the percentage of the population that is highly annoyed by

aircraft noise. The National Curve indicates that, if one subjected a representative population to a 60-65 DNL aircraft noise environment, one should expect more than half to find the noise highly annoying.

Figure 1. Comparison of Schultz (FICON 92) Curve and U.S. National Curve from NES

DNL Noise Level	FICON 92 Curve % Highly Annoyed	National Curve % Highly Annoyed	National Curve % Highly Annoyed (95% Confidence Limits)
65dB	12.3%	65.7%	60.1%-70.9%
60dB	6.5%	48.8%	43.8%-53.7%
55dB	3.3%	32.1%	27.8%-36.8%
50dB	1.7%	19.1%	15.4%-23.4%



166: In discussions, the previous Board compared concerns about aircraft noise at Dulles with concerns about I66 highway noise where the highway cuts through Providence District. Apparently, even with 30-foot-tall noise fences, sound levels in some backyards cannot be reduced to less than 65 DNL. In the context of protecting residents from noise, the discussion questioned the rationale of efforts to protect residents from 60-65 DNL noise at Dulles when noise levels along I66 easily can exceed 65 DNL. The response is that I66 noise (unfortunately) is unavoidable while resident noise exposure at Dulles is (almost) entirely avoidable. For afflicted homeowners along I66, the noise came with the highway. They had no option for avoiding it. No one needs to get stuck with Dulles noise. The noise is at Dulles and it's not going to bother residents unless they move to Dulles. Just don't move there. Accordingly, the Board should not permit residential developments in high-noise areas near the airport.

8. Noise Mitigation and Prevention⁹

In order to understand what this paper calls the Dulles Noise Protection Policy, it's important to recognize the two means for managing aircraft noise in residential areas, namely mitigation and protection.

Mitigation provides means for reducing the consequences of noise in an impacted community. A typical project is providing affected homes with sound insulation. Principal limitations of mitigation in residential districts are its limited ability to treat outdoor areas, the requirement to keep windows in homes closed year around, and limitations of affordable architectural treatments to provide more than 20 -25 dB of attenuation.

Prevention is preferable. Simply do not inflict aircraft noise on communities. To create an airport that does not impose noise upon homes, the airport in the first place would need to be built out and away from residential neighborhoods. Secondly, the airport would need to be protected by land use policies that discourage residential developments from later encroaching on the area around the airport that is impacted by noise. The airport would need to map out the Noise Impact Area and land use policies would discourage, for the lifetime of the airport, residential development in this area.

The Noise Impact Area necessarily must be based on an estimate of the noise the airport would generate operating at its full build-out capacity. If the plan were to keep residences outside the 60 DNL contour and the contour were based on a 20-year traffic forecast (as an example), it is likely that developments would be allowed in locations where, 30 or 40 years later, noise would be more intense, the 60 DNL contour would have moved farther out from the airport, and older residences would find themselves inside the contour. Residents sensibly would complain about the increase. If the plan is to keep residents outside a particular contour (e.g., 60 dBA) for the life of the airport, that contour on the ground must be calculated based on airport noise generated operating at full capacity.

A protection policy based on forecast traffic demand implicitly would limit the economic future of the airport. The policy must be based on noise generated by operation at full capacity. This is a founding principle of the Noise Protection Policy. [3, pg 19-23]. The essential elements of the policy are:

- Fairfax County has delineated a Noise Impact Area based on noise contour maps provided by MWAA that represent airport operation at full capacity,
- Residential development is not recommended inside the 60 DNL contour of the area,
- As new contour maps become available, they will be brought to the Board so that appropriate modifications can be made to the Noise Impact Area.

The roots of the protection policy are in a 1985 master plan developed by FAA, then the owner of the airport. The policy responded to a need to counter pressure for development of noise-sensitive land uses in the vicinity of the airport. A concise summary of the evolution of the policy is in the Ricondo Dulles report. [2, pg 2-1 to 2-5]

⁹ The JA report [12] addresses correction (mitigation) and prevention approaches to noise management in Sect 2.3 on pgs 25-30.

9. Dulles and Denver Int'l

Dulles (dedicated 60 years ago in 1962) and Denver International (1995) are the only two airports constructed on “green fields” out and away from residential developments in the last 60 years. Their noise protection policies are very similar. Noise Impact Areas are based on airport operations at full capacity, and residential development is discouraged inside 60 DNL contours. No new residential rezoning has been approved within the 60 DNL contour at Denver Int'l since establishment of its Noise Impact Area. [12, Sect 3.1]. The following is taken from the JA report: [12, pg 30].

land use planning around Dulles International Airport is considered optimal and envied by other airports because of the ability to effectively use the ASV contour. This approach was possible as they are one of only two major international airports in the U.S. that started from a green field site with little local development. The other airport that meets this criterion is Denver International Airport. Both airports, and the surrounding jurisdictions, have taken similar approaches to land use planning and taken advantage of the limited community development that existed at the time each airport was constructed. This forward thinking has allowed a land use compatibility planning buffer to be established that most other airports in the country strive for but never achieve. The use of the ASV contour may seem excessive from a planning standpoint, but it is considered the best way to establish a buffer that allows for changes in noise impacts to occur without significantly impacting populations.

The report provides the following summary of the subject on the first page of the cover letter: [12]

Fairfax County and MWAA together have made Dulles International a rare example in the U.S. of well-planned, airport-compatible land use success.

10. Understanding MWAA's 2019 Noise Map and Contours

Table 1 shows 1993 and 2019 capacity estimates developed by MWAA for Dulles. [13, Slide 7]

Table 1. Dulles Airport Capacity Estimates

Estimate Year	Active Runways	Capacity (ASV, 1000's)	Ave. Annual Day
2019	5	1,004 operations/year	2,751 (operations/day)
2019	4	900 operations/year	2,466 operations/day
1993	5	740 operations/year	2,027 operations/day

The process used to generate the estimates calculated the full capacity of the airport expressed in terms of its Annual Service Volume (ASV), the total number of operations (sum of take-offs and landings) that the airport can accommodate in one year.¹⁰ ASV depends upon a number of parameters, including [2]:

- Runway geometries and capacities;
- Runway configurations (how air traffic controllers groups runways to match traffic flows - one configuration for traffic arriving from the north (south flow), a different one for north flow);
- Air traffic control procedures and standards for setting up arrival and departure streams;
- Weather conditions (higher departure rates on clear-weather days, lower in inclement weather); and
- Fleet mix, (10% heavy jets, 24% large, 21 % turboprops, etc.)

¹⁰ The accepted procedure for calculating airport capacity is specified in FAA Advisory Circular 150/5060-5 [16], one of the AC's in FAA's Part 150 series regarding noise compatibility at airports.

ASV then is divided by 365 to produce the number of operations during the Average Annual Day (AAD). The noise corresponding to AAD operations then is spread (averaged) over 24 hours to produce the Day/Night Average Sound Levels (DNL values), and the contours. Contours corresponding to the airport operating at capacity are designated **ASV contours** in the JA report. There are four important things to notice from this description.

- (1) Capacity and Demand Are Not Related: The capacity calculation does not depend upon current or projected traffic demand. Capacity (ASV) is the ability of the airport to service demand, whatever the demand may be. It does not dependent upon the level of demand.
- (2) Capacity Is Not a Plan: Capacity is an estimate of the number of operations that can be accommodated given the characteristics of the airport and the environment, fleet mix, rules, regulations, procedures; etc. It is not a plan in any sense, nor is it a goal for the growth of the airport.
- (3) MWAA's 2019 Capacity Calculation is not Based on Long-Range (60-90 Year) Projections. The 2019 contours were developed by a capacity analysis described in the Ricondo Dulles report. [2] The capacity calculation was based on current operations and airport statistics (experience). Fleet mix took into account an expectation that the mix will tend slightly toward larger aircraft over the next 20 years. Very long-range projections were not used in generating the 2019 contours.
- (4) Today's Noise Levels May Match or Exceed Values Depicted on ASV Contours. The ASV contours depict the expected average annual noise levels when the airport is operating at full capacity. Sustained (day-after-day) operation of Dulles at full capacity may not occur for another 60 years - currently the airport is at 30-35% capacity. However, aircraft noise at airports varies widely around the average and easily can approach and exceed average annual levels depicted on ASV contours even when the airport is not at full capacity year around. For example, in Jun 2020 the County measured aircraft noise levels at a point on the Boulevards property that was located 800 feet outside the 1993 60 DNL ASV contour. The 24x7 aircraft noise level averaged over a one-week period was 59 DNL, exactly the level predicted by the 1993 contours for this site when the airport is operating at full capacity. [17, App 8, pg 189/228.]. In 2020, Dulles operated at approximately 30% capacity. The point to notice is that busy traffic periods at Dulles today can generate noise at levels equal to and exceeding the dB levels on the contours.

11. Dulles Planning Is Not "Different" from That of Other Large Hubs.

In the 21 July 2020 meeting of the LUPC, staff expressed the misplaced concern that Dulles does not plan in a way consistent with practices of other large hubs. That is, Dulles develops contours based on airport capacity while the other hubs make plans based on 5-20-year projections of traffic demand.

The 5-20-year plans that staff referred to are Airport Master Plans and Part 150 Noise Compatibility Program project plans. An Airport Master Plan provides a framework for long-term development of the entire airport. It facilitates access to FAA Airport Improvement Program (AIP) funds (\$13.3b annually) that support airport development nationwide. The typical horizon is 20 years and the plan is based on

9 Mar 2022

forecast traffic demand. Dulles is in the process of updating their [airport master plan](#) with an expectation that it will be finished in 2023.

Airports with noise mitigation issues may prepare Noise Compatibility Program project plans under Part 150 and submit them to FAA in hopes of obtaining AIP funds for noise mitigation projects. A typical project is providing sound insulation for impacted homes. FAA provides 80% of funds required for approved insulation projects; the applicant/locality provides the 20%. These plans address relatively short time horizons, a minimum of 5 years and may go longer. They are based on forecast traffic demand. If the Dulles Noise Protection Policy has been successful in keeping noise-sensitive uses away from the airport, it is possible that Dulles has never submitted a Part 150 Noise Compatibility Program project plan.

The following excerpt from the JA report describes the value of the Noise Protection Policy at Dulles (and similarly, at Denver Int'l) with a comparison to the situation at the other major hubs that have been forced to rely upon noise mitigation projects supported by FAA's Part 150 Noise Compatibility Program. [12, p7].

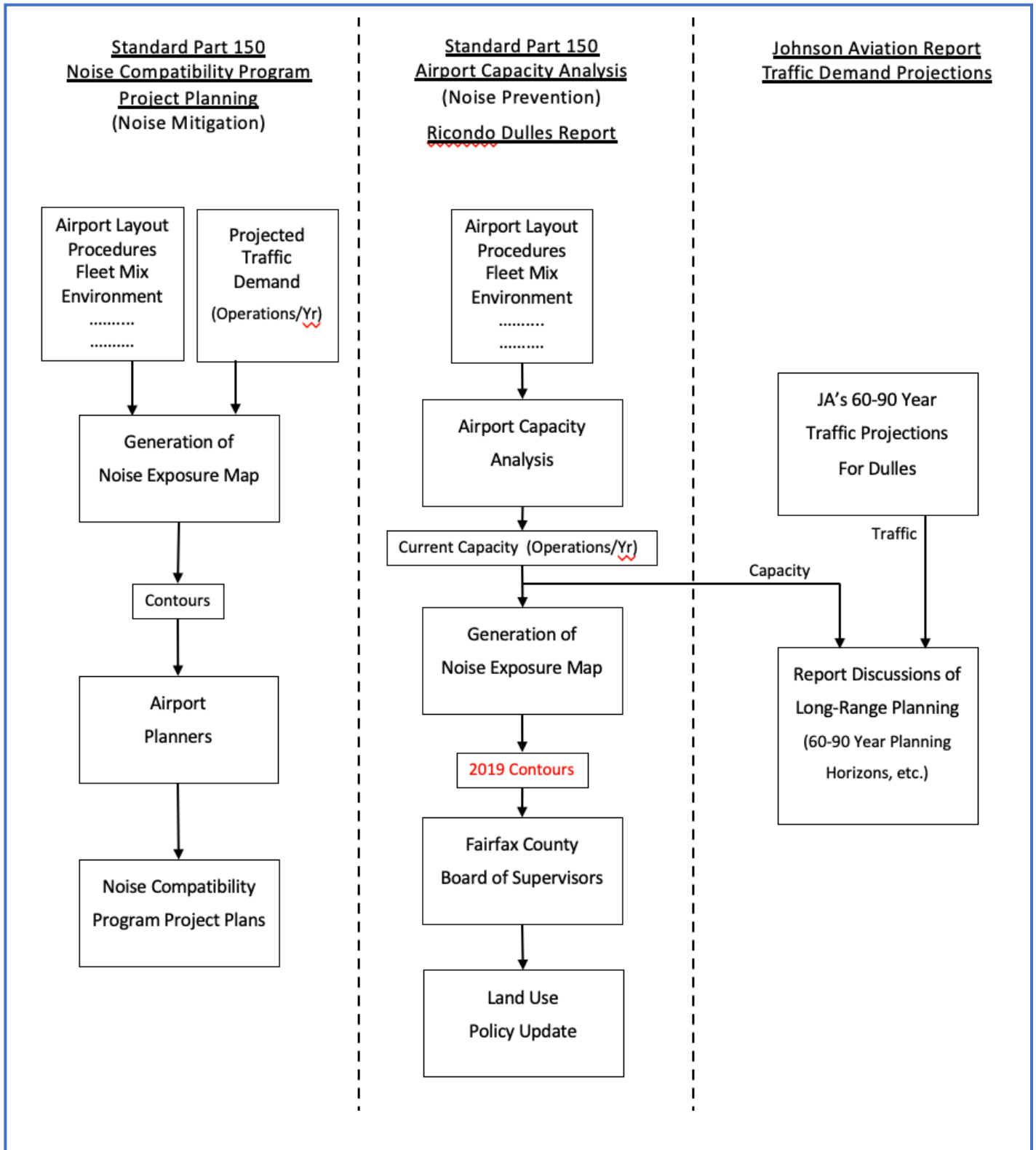
Denver International Airport and Dulles International are the only two "green field" large hub airports developed in the U.S. in the last 60 years. All other large hub airports have grown with the increase in demand for air service while the communities around those airports have grown in around them. Quieter aircraft and billions of dollars in noise mitigation have combined over time to reduce the number of people impacted by aircraft noise while the number of aircraft operations have increased dramatically. However, the problem of community aircraft noise impacts is far from eliminated and this spending by the Federal Aviation Administration (FAA) and local communities will continue."

12. Long-Range Planning - Comment on the Johnson Report

In my opinion, Johnson Aviation provided a valuable report. Recommendations are well substantiated and a wealth of information on the intersection of airports with aircraft noise is provided. One comment on text in the report may help resolve a point of confusion evident in the 21 July 2020 meeting of the LUPC. A number of meeting participants went away with an incorrect conclusion that the Ricondo Dulles report, which produced the 2019 contours, is the product of long-range projections and planning, with a planning horizon of 60 to 90 years. This section hopes to completely dispel the misunderstanding.

The left-hand column of Figure 2 provides a conceptual overview of the role contours play in developing standard Part 150 Noise Compatibility Program project plans discussed in the preceding section. The process begins with collection of pertinent information about the airport, its environment, and projected traffic demand. These projects typically are accomplished within 5-10 years and take their traffic demand forecasts from FAA Terminal Area Forecast. [18] The standard Part 150 process requires that applicants submit contours supporting their project plans. As described earlier, most large hubs struggle with noise mitigation issues. Consequently, it is reasonable to expect that many are active participants in the Part 150 Noise Compatibility Program. As pointed out earlier, it is possible that Dulles is not an active participant because the Dulles Noise Protection Policy has assured that the airport has few noise issues requiring mitigation.

Figure 2. Part 150 Procedures and Johnson Aviation Traffic Projections Compared



The procedure that Ricondo used to calculate the capacity of Dulles and the 2019 contours also is a standard Part 150 process. As shown in the center column of Figure 2, the process again began with collection of pertinent data, including airport layout, procedures, fleet mix etc. That data was used to generate an estimate of the current capacity of Dulles. The next step used the airport information and the capacity estimate to produce the 2019 noise exposure map and its contours via the same map generation process used for Noise Compatibility Program project plans. The updated contours should now be adopted by the Board as the contours underlying a new Dulles Noise Protection Policy. Both Dulles and Denver Int'l use Part 150 capacity analyses to support land use policies protecting the airports from encroaching residential developments. Part 150 capacity analysis also is used nationwide in developing environmental impact statements supporting airfield modifications.

The Ricondo Dulles report sensibly did not compare capacity with forecast demand. As Figure 2 illustrates and was stated earlier, capacity is not affected by demand nor does it depend upon when, in time, demand may exceed the capacity of the airport. On pg 37, the JA report [12] states that they noticed that Ricondo had not made a demand projection and elected to provide one. The report and their briefing slides then spent some time discussing their traffic demand projection, including the difficulties and uncertainties inherent in making long-range traffic forecasts out to 60 or 90 years. For example, the first briefing slide speaks of a "60-to-90-year planning horizon."

It is helpful to learn from JA's long-range traffic projection that Dulles may have another 60 years, even 90 years, to go before traffic demand may exceed capacity. However, the discussion in the report of long-range traffic projections led some, staff in particular, to conclude incorrectly that the Ricondo capacity analysis is based on unreliable long-range projections. It is not. Hopefully, it is clear from Figure 2 that the Ricondo Dulles analysis, its capacity calculations, and the 2019 contours are based on the characteristics of today's airport, not projections into the long-range future.

13. July 21, 2020 LUPC Meeting Issues

The County engaged Johnson Aviation to provide perspective and recommendations regarding the 2019 contours. Misunderstanding both the report and airport issues may explain some of the perplexity in staff's 21 July 2020 briefing. Whatever the reasons, the large number and nature of critical misunderstandings and omissions jeopardizes progress toward a win-win solution for the County, the airport, and Westfields. The following is an effort to redress principal issues. Staff's briefing slides are available at Ref [19].

13.1. Staff's Recommendation to Not Adopt 2019 Contours

Staff's recommendation that the 2019 contours should not be adopted was based on:

- *Staff's concern that the contours are the product of a long-range plan with a planning horizon of 60 to 90 years.* But the 2019 contours are not a plan. They are a calculation, and the calculation did not use long-range projections. See Sect 10 (2) and (3) above.
- *Staff spoke critically of the fact that Dulles has adequate capacity to meet demand for the next 60 years plus.* As explained in Sect. 3, the excess capacity available today belongs to the future of the Dulles airport and the economy it supports. It embodies the airport's ability to grow with the

economic development of the County, the region, and the Nation, a rare commodity among today's major hub airports.

- *Staff's concern that Dulles does not plan in a way consistent with practices of other large hubs.* As explained in Sect 11, planning at Dulles is wholly consistent with the planning one would expect at a large hub airport.

These misguided reasons for staff recommending that the 2019 contours should not be adopted may derive simply from a misunderstanding of the JA report, but it is remarkable that no reason addressed the purpose of the contours. Would the 2019 contours better serve their purpose?

Sect 3103.2 of the Zoning Ordinance describes the purpose of the Airport Noise Impact Overlay District¹¹ and its contours as follows:

The Airport Noise Impact Overlay District is established for the general purpose of controlling conflicts between land uses and noise generated by aircraft and to protect the public health, safety, and welfare from the adverse impacts associated with excessive noise.

The 2019 contours update the 29-year-old 1993 contours taking into account quieter aircraft and the more concentrated approach flightpaths that resulted from the NextGen airspace changes at the airport. They more accurately describe the noise environment at Dulles now and in the future. Consequently, they provide better guidance for land use decisions intended to protect public health and welfare from conflicts with aircraft noise. The 2019 contours better serve their purpose and should be adopted.

Finally, in the 21 July 2020 LUPC contours briefing, staff failed to tell supervisors that the JA report recommended that the Board should adopt the 2019 contours; that the Planning Commission, in its 24 Apr 2019 meeting, recommended that the Board submit the contours for consideration via the standard Comp Plan amendment hearing process [6]; that the County's Environmental Quality Advisory Council recommended adoption; and that three aviation experts who testified in the 7 May 2019 Westfields hearing stressed the importance of adopting the contours.¹² These omissions were a particular disservice to new supervisors who had joined the Board the previous January and presumably were not familiar with the history.

The discussion of the 2019 contours in the 21 July 2020 meeting was ill-informed, misdirected, and incomplete. The question of adopting the 2019 contours remains open.

13.2. Residential Development Between the 60 & 65 DNL Contours

Staff's conclusion that the Comp Plan should recommend residential development between the 60 and 65 DNL contours was based on:

- *Staff's assertion that the JA report recommended the development.* But the JA report did not recommend residential development everywhere between the 60 & 65 DNL contours like the Westfields amendment had allowed in Land Unit J. JA recommended an analysis to allow residential with restrictions, noting that the restrictions would be really important because otherwise there would be impacts. Obviously, formulation of the restrictions would come before any consideration

¹¹ This paper uses "Noise Impact Area" as shorthand for "Airport Noise Impact Overlay District."

¹² Michael Cooper, Richard Del Tos, and Keith Meurlin. See Sect 6.

would be given to considering a plan amendment to incorporate them. One restriction worth considering is a requirement to solicit comments on any such rezoning application from the planning staff at Dulles. In addition, Loudoun County allows residential development between 60 & 65 DNL under certain conditions. Understanding those restrictions and Loudoun County's experience with their application would be helpful.

- *Staff recommended residential development between 60 and 65 DNL so that the County then would have a policy "consistent with land use policies of most jurisdictions with international airports."* But no. Fairfax County should not mindlessly adopt land use policies of other airports.
 - First, it's unlikely that staff has reviewed the land use policies that apply to "most international airports" and is in a position to justify the County adopting policies like some, all, or any of them.
 - Second, the JA report is clear that most if not all major hub airports are landlocked in residential developments that impede operations and growth. Some of these developments undoubtedly are located between 60 and 65 DNL contours. But Dulles airport does not want to be landlocked in residential development like the other airports. Avoiding this fate has been the objective of the successful Dulles Noise Protection Policy these past 37 years.

The staff recommendation that the County adopt land use policies like those of other international airports lacks both substance and logic. It should not be adopted.

- *Staff asserted that recommending residential development between 60 & 65 DNL would correct an unspecified misalignment between the Zoning Ordinance and the Comp Plan.* The Comp Plan states that residential development is not recommended inside the 60 DNL contour. The Zoning Ordinance in Sect 3103.2 *Airport Noise Impact Overlay District* provides acoustical performance standards for uses exposed to noise levels exceeding 65 DNL. There is no apparent misalignment between Comp Plan and Zoning Ordinance. If staff is referring to a different misalignment it should be specified.

Staff has not provided a rational basis for its recommendation to allow residential development between 60 & 65 DNL.

13.3. Invalid Plan Amendment

The untenable 21 July 2020 LUPC meeting unfortunately disseminated an unhealthy dose of misunderstanding about the origins and value of the 2019 contours thereby impeding their proper consideration and adoption. Staff's proposal that the 2019 contours should not be adopted is discredited on every point. Adoption of the 2019 contours remains an open question.

Secondly, meeting results dispute the legitimacy of subject plan amendment, PA 2020-CW-3CP. The proposal in the 28 July 2020 Board meeting that authorized the amendment [20] is based on three premises:

- *First, that Johnson Aviation recommended a policy change to allow residential uses between 60 and 65 DNL. Not true. JA recommended analysis to establish restrictions that would apply to such developments. Any consideration of a plan amendment presumably would follow development of the necessary restrictions.*
- *Second, that the County should modify its land use policies to be consistent with the policies of most jurisdictions with international airports. No logical reason was given for making such a change and there's every reason not to.*
- *Third, that there is a misalignment between the Comprehensive Plan and the Zoning Ordinance. None is apparent. If one exists, it should be specified.*

None of these premises is valid. Consequently, authorization of subject plan amendment was based on false premises, and the Board should withdraw it.

14. First Principles

A first responsibility of the Board is to protect the health and welfare of residents. I feel certain that supervisors would agree. However, the aspect least addressed by supervisors in discussions of new residential development in and around Dulles [8,9,10] has been the effect of aircraft noise on future residents of these developments. The developments will encourage residents to move into areas affected by annoying aircraft noise. Obviously, the Board has a responsibility to assure that the residents will live in a healthy environment where families can grow and thrive.

The redevelopment recommended by the previous Board in adopting the Westfields amendment was strongly opposed in the 7 May 2019 hearing by three local aviation industry experts. Aircraft on approach to the two busiest runways at the airport pass directly over the Westfields area at altitudes only 900 to 1100 ft above the ground. The MWA speaker stated that aircraft passing directly overhead is particularly annoying and recommended that the redevelopment be reconsidered. The Metropolitan Washington Airlines Committee representative said the redevelopment would be an unmitigated disaster. The United Airlines representative offered that the noise would not be mitigatable.¹³ No knowledgeable speaker countered this testimony. The previous Board nonetheless adopted the plan amendment 6-3-0.

If previous Board members were asked today to substantiate their decision to adopt the amendment, they would be able to speak to the needs of Westfields, but no evidence suggests that they have considered consequences for residents.

The Board might task staff to identify recent new residential developments subject to noise from aircraft passing directly overhead only 1000 ft above the ground. It would be helpful to understand how these developments have coped with the noise.

The Board also has an obligation to protect the capacity and welfare of Dulles. Like residents, the welfare of Dulles has received scant attention. If County land use decisions do not protect Dulles from encroaching residential development, its capacity and economic power will be compromised, and the damage will be permanent. Once constructed the developments will not go away. For the past 57 years, supervisors have effectively protected the airport. As one speaker in the Westfields hearing pointed out, the Board now has an opportunity to choose to continue protecting Dulles airport.

15. Conclusion and Recommendations

Conclusion: The purpose of the 21 July 2020 LUPC meeting apparently was to secure Board agreement that the 2019 contours should not be adopted, and PA 2020-CW-3CP, which recommends residential development everywhere between 60 & 65 DNL, should be adopted. As described in this paper, neither proposal was supported by cogent argument and opposing opinions were concealed. The misleading material presented, the lack of relevant considerations, and the omission of expert opinions that disagreed with staff's proposals discourage confidence in the meeting process. The question of adopting the 2019 contours remains open. In addition, the authorization of PA 2020-CW-3CP was based on false premises and should be withdrawn.

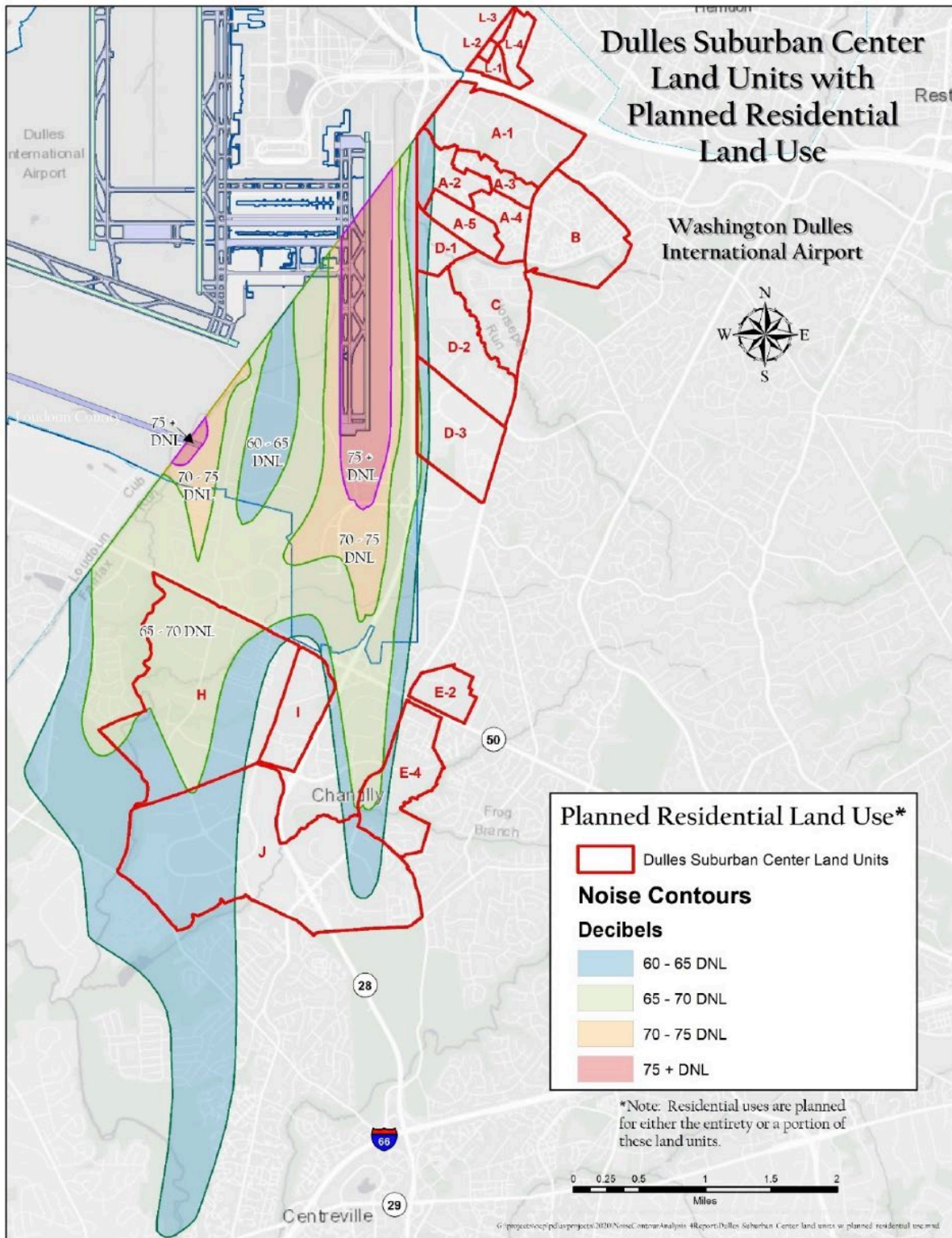
¹³ Speaker names and the times they spoke are in Sect 6.

Recommendations: The Board should proceed along the lines recommended by the Johnson Aviation report:

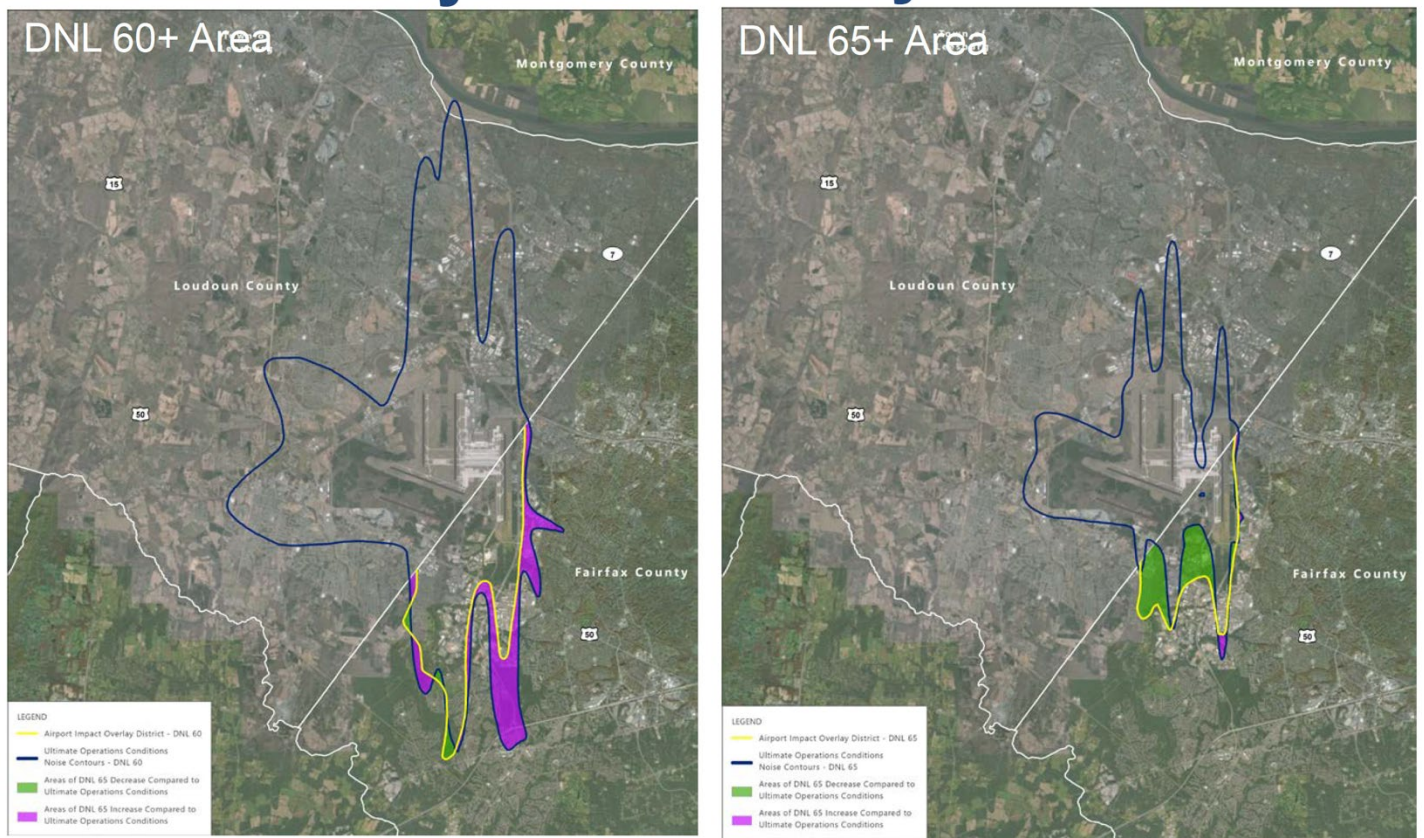
- As soon as reasonably possible, the Board should proceed with consideration, in public, of adopting of the 2019 contours. The Planning Commission should be asked to conduct a public workshop on the question and prepare a report and recommendation for the Board's consideration in a public hearing. If the 2019 contours are adopted, the Comp Plan should be amended accordingly.
- The Board should proceed with JA's recommended analysis and development of appropriate restrictions on new residential developments between the 60 and 65 DNL contours. The analysis and development of restrictions should be conducted in collaboration with MWAA and Loudoun County planning staffs with a goal of providing a coordinated solution. The restrictions should be adopted as a Comprehensive Plan amendment via the standard amendment process with public hearings.
- The Board should make no land use decision affecting parcels between the 2019 60 & 65 DNL contours or between the 1993 60 & 65 DNL contours until the actions above have been accomplished.

In the 7 May 2019 Board hearing on the Westfields amendment, John Boylan, President of the Dulles Regional Chamber of Commerce, opposed the Westfields amendment. He spoke of his faith in the area and determination that Westfields should not be allowed to fail. At the same time, he spoke of the need to protect the airport ("do no harm") and to respect the contours. Mr. Boylan commended contributions that MWAA had made to resolve issues to that point and recommended that the parties take more time to find a "Dulles solution" for Westfields. [8, 4hr:51min] Clearly, Mr. Boylan's recommendation is the approach most likely to produce a win-win for stakeholders. It's the preferred approach for the future and should be adopted by the Board. I plan to distribute a paper describing the process used in adopting the Westfields amendment within the next two weeks.

Figure A1. 1993 Contours Superimposed on Dulles Suburban Center Land Units for Which Residential Uses Are Recommended. [11, pg 17]



**Figure A2. Comparison of 1993 and 2019 Contours. [2, pg 17]
(1993 Yellow Contours and 2019 Blue Contours)
(2019 Contours Add Magenta Areas to the Noise Impact Area and Remove the Green Areas)**



**Figure A3. DSC Land Unit J: 1993 and 2019 Noise Contours. [2, pg 369 & 373]
(1993 Orange Contours and 2019 Blue Contours)**



References

1. Smith, Kathy. Plan Amendment 2018-III-DS1, Dulles Suburban Center, Land Unit J (Westfields). Follow-On Motion. Board of Supervisors. 7 May 2019. [[Link](#)]
2. Aircraft Noise Contour Update. Ricondo and Harris Miller Miller & Hanson. May 2019.¹⁴ [[Link](#)]
3. Plan Overview. Comprehensive Plan, Area III. Current Plan (2017 Edition, Amended thru 16 Oct 2018). [[Link](#)].
4. Potter, J.E. Letter to Board Chairman Sharon Bulova Re: Washington Dulles International Airport Noise Contour Map Update. 19 April 2019. [[Link](#)]
5. Staff Report. PA 2018-III-DS1, Dulles Suburban Center (Land Unit J). 13 Feb 2019. [[Link](#)]
6. Cooper, Jill. PA 2018-III-DS1 – Comprehensive Plan Amendment (Dulles Suburban Center, Land Unit J, Sully District). Planning Commission Memo. 30 April 2019. [[Link](#)]
7. Clerk’s Board Summary. Plan Amendment 2018-III-DS1, Board of Supervisors. 7 May 2019. [[Link](#)]
8. PA 2018-III-DS1. Land Unit J of the Dulles Suburban Center. Board Hearing. 7 May 2019. [[Video Record](#)]. Start at 4hr:32min:30sec.
9. Land Use Policy Committee Meeting. 21 Jul 2020. [[Video Record](#)]. Start at 1hr:27min:20sec.
10. Board Briefing on Dulles Airport. Board Meeting with MWAA. 6 Mar 2019. [[Video Record](#)]. Start at 46min.
11. Issue Paper: Comprehensive Plan Amendment (PA 2020-CW-3CP, Airport Noise Policy.) Department of Planning and Development. 1 Nov 2021. [[Link](#)]
12. Johnson, Nick. Review and Assessment – Dulles International Airport Aircraft Noise Contour Map Update. Johnson Aviation Consulting, Oak Park, CA. 15 Mar 2020. [[Link](#)]
13. Johnson Aviation Inc. et al. Dulles Int’l Airport Aircraft Noise Contour Map Update Project Briefing. Briefing to Board LUPC Meeting, 21 July 2020. [[Link](#)]
14. Neighborhood Environmental Survey. Web Page. Federal Aviation Administration, U.S. Department of Transportation. 26 July 2021. [[Link](#)]
15. Doyle, Sean et al. U.S. Federal Aviation Administration Research on Aviation Noise: Understanding Challenges, Developing Solutions, and Informing Decision Making. 13th IC BEN Congress on Noise as a Public Health Problem. Stockholm, Sweden. 14 -17 June 2021. [[Link](#)]
16. Advisory Circular: Airport Capacity and Delay. AC 150/5060-5. Federal Aviation Administration, U.S. Department of Transportation. 23 Sep 1983. [[Link](#)]
17. Staff Report. RZ 2019-SU-010, The Boulevards at Westfields. 16 July 2019. [[Link](#)]
18. FAA Terminal Area Forecast 2020-2045. Federal Aviation Administration, U.S. Department of Transportation. No date. [[Link](#)]
19. Byron, Barbara. Washington Dulles International Airport: Airport Noise Considerations. Department of Planning and Development. 21 July 2020. [[Link](#)].
20. Smith, Kathy. Authorization of a Comprehensive Plan Amendment to Update County Policies Regarding Airport Noise. Board Matter, Board of Supervisors. 28 July 2020. [[Link](#)]

¹⁴ The author of this paper is not related to anyone at Harris Miller Miller and Hanson.