Metropolitan Airports Commission (MAC)

Minneapolis-St. Paul International Airport (MSP)
Noise Oversight Committee (NOC)
MAC General Office Building
Lindbergh Conference Room
6040 28th Avenue South
Minneapolis, MN 55450

NOC Committee Members

Jeffrey Hart – Co-Chair (Delta Air Lines)
Dianne Miller – Co-Chair, City of Eagan Representative (Assistant City Administrator)
John Bergman – At-Large Community Representative (Apple Valley City Council)
Pam Dmytrenko – City of Richfield Representative (Assistant City Manager)
Karen Erazo – Charter/Scheduled Operator Representative (Sun Country Airlines)
Gordon Goss – Chief Pilot Representative (Delta Air Lines)
Angie Moos – Cargo Carrier Representative (United Parcel Service)
Doug Nelson – Minnesota Business Aviation Association Representative
Jon Oleson – City of Bloomington Representative (Bloomington City Council)
Jay Miller – City of Mendota Heights Representative (Mendota Heights City Council)
John Quincy – City of Minneapolis Representative (Minneapolis City Council)
Paulajean Vick – At-large Airport User Representative (Delta Global Services)

MEETING AGENDA (REVISED 3/7/2017)

March 15, 2017 at 1:30 pm
MAC General Office Building
Lindbergh Conference Room
(Dianne Miller, City of Eagan, will be the acting Chairperson for the meeting)
***Note:** 1:00 to 1:30 – Committee Agenda Review Session
(NOC members only in the Stapp Conference Room)

1.	1:30 – 1:35	Review and Approval of the January 18, 2017 Meeting Minutes
2.	1:35 – 1:50	Review of Monthly Operations Reports: January and February, 2017
3.	1:50 – 2:15	Review Format of Monthly Operations Summary Report
4.	2:15 – 2:30	Update on Converging Runway Operations – Kurt Mara, FAA
5.	2:30 – 2:40	Update on RNAV STAR Adjustments – Kurt Mara, FAA
6.	2:40 – 3:00	2016 Actual Noise Contour Report and Consent Decree Amendment Mitigation Eligibility
7.	3:00 – 3:20	Evaluation of Distant Noise Abatement Departure Profile (NADP) Use at MSP
8.	3:20	Public Comment Period
9.		Announcements
10.		Adjourn

Note: The Spring Listening Session will be held on April 19, 2017 at the Eagan Community Center, 1501 Central Pkwy, Eagan, MN 55121.

MSP NOISE OVERSIGHT COMMITTEE
MEETING MINUTES
Wednesday, 18th of January 2017 at 1:30pm

Richfield Municipal Building,
Council Chambers

Call to Order

A regularly-scheduled meeting of the MSP Noise Oversight Committee, having been duly called, was held Wednesday, 18th of January 2017, in the Council Chambers at the Richfield Municipal Building. Chair Hart called the meeting to order at 1:36pm. The following were in attendance:

Representatives:	P. Dmytrenko; K. Erazo; T. Foster; A. Moos; J. Miller; L. Olson; D. Miller; J. Hart; G. Goss; J. Oleson; J. Bergman
Staff:	D. Nelson; B. Juffer, C. Leqve; A. Kolesar; G. Warren; J. Lewis; B. Ryks
Others:	G. Putnam-City of Mpls; L. Grotz-City of Edina: J. Aul-City of Bloomington; D. Nuccio-Housing and Urban Development; D. Swan-City of Mendota Heights; M. McNeil-City of Mendota Heights; M. Resanglz-City of Richfield; B. Hoffman-City of St. Louis Park; Dan Boivin – MAC Chairman; Katie Clark Sieben – MAC Commissioner

The meeting started with Metropolitan Airports Commission Chairman, Dan Boivin, introducing newly appointed Commissioner Katie Clark Sieben. Clark Sieben is to replace Lisa Peilen on the MAC Board. Among other things, Clark Sieben is the former Commissioner for Minnesota Department of Employment and Economic Development (DEED).

1. Review and Approval of the November 16, 2016 Meeting Minutes

Chair Hart, Delta, requested a motion to approve the minutes from the November 2016 NOC meeting, **Representative Oleson** made the motion with a second from **Representative Miller** and was passed unanimously.

2. NOC Community Co-Chair Nomination and Election

Chair Hart, Delta, introduced the need for a vote for an interim co-chair for 6 months. Then the voting cycle for a 2 year term will align with the other 2 year terms. **Representative Dmytrenko, Richfield,** nominated **Representative Dianne Miller, Eagan**, with a second from **Representative Bergman, Apple Valley.** The motion carried unanimously.

3. Review of Monthly Operations Reports: November and December 2016

Brad Juffer, Assistant Technical Advisor reported 7,244 aircraft noise complaints in November and 6,318 aircraft noise complaints in December were recorded for MSP. Complaints in

November 2016 were up 4.2% from November 2015, while complaints in December 2016 were up 6.8% from December 2015. In November, 304 locations filed a complaint related to MSP, dropping further to 183 locations in December. This equates to an average of 24 complaints per location in November increasing to 34 complaints per location in December. The year-end complaint total for 2016 was 116,958 which is an increase of 3.8%.Those complaints were filed from 2,805 locations in 2015 decreasing to 2,711 locations in 2016 or a reduction of 3.4%. In 2016 the top 10 locations filing complaints contributed 36.1% of the nearly 117,000 complaints for the year. The top 50 filed 66.2% of the complaints while the top 100 locations submitted nearly 80% of all complaints. On the opposite end of this spectrum is the largest group. In 2016, 2,068 unique addresses or 76% of all locations filed less than 10 complaints.

Juffer reported that the Noise Office recorded 32,102 operations at MSP in November and that number increased to 33,103 in December. Those totals were 0.6% and 2.3% higher than the same months of 2015. Year-to-date the noise office recorded 410,887 flights at MSP. This total is 2.1% above last year. **Juffer** surmised that the FAA's final number for MSP will be just under 413,000 operations. 3.1 million people flew through MSP in October followed by 2.78 million in November. On average 98 people were on every airplane in October with that number falling to 92 in November.

Juffer reported November and December collectively saw a 43/57% split between regional jets and mainline aircraft. 2015 was 45/55%. 61,266 operations occurred between 6:00 AM and 10:30 PM. The remaining 3,939, or 6% of aircraft operated during MSP nighttime. Last year for the same time period, 3,472 operated at night which equates to 5.4%. In November, most of the deviation from scheduled to actual occurred in the 10:30 PM, 12 AM, and 5:00 AM hours. 996 of the scheduled and 1,274 of the actual flights were arrivals, leaving 194 of the scheduled and 411 of the actual for departures. In December, 1,159 of the scheduled and 1,438 of the actual flights were arrivals, leaving 269 of the scheduled and 604 of the actual for departures. The cargo activity was expected to rise in December to meet the Christmas demand. But the scheduled nighttime flights did not happen. In November there were 124 scheduled and 128 actual cargo flights. In December there were 156 scheduled but only 127 actual flights at night. To break it down even further, there were higher than normal nighttime operations on November 18, nearly double a typical night due to snow and higher than normal on 11/22-11/23 for freezing rain and then on 11/27-11/28 for rain and thunderstorms. In December snow caused delays and increased nighttime ops on 12/16-12/17 and again on 12/27.

Juffer moved on to report on compliance with noise abatement procedures. For Runway 17, 99.3% and 99.1% of all jets complied with the Runway 17 Departure procedure in November and December, respectively. 77 total jets for the 2 months were west of the 2.5 turn point.

Regarding the corridor – 95.1% and 94.9% of all 12L/12R carrier jets remained in the corridor in November and December. There were 48 south bound deviations on 11/18 due to snow, high northeast, north, northwest winds; 31 south bound deviations on 12/16 due to snow; 48 deviations on Christmas due to rain, high winds. The crossing procedure was used 42% in November and 54% in December during the nighttime hours. During the day time, the percentages dropped to 32% in November and 28% in December.

Juffer reported that high priority runways were used 56.5% in November, and very similar in December with 55%. These two months were the highest utilization of the RUS since we began

tracking this metric. Mixed A (departures on Runway 17 and arrivals and departures on Runways 30L and 30R) was used for 16% of the hours in both months. In November, 56% of all arrivals used a high priority runway; 54% during the morning shoulder and 46% in the evening shoulder, the nighttime percentage was 49%. 57% of all departures used a high priority runway; 62% in the morning and 60% in the evening and night. To have 56% of arrivals and 57% of departures on high-priority runways is the direct result of high Mixed-A usage. The airport was in a North flow in December more than in November. As such, Runways 30L and 30R saw an increase in arrivals and accounted for most of the 67% high priority runway use for arrivals in December; 71% in morning, 66% in evening and 70% at night. In December, 43% of departures used high priority runways; 34% in morning and evening and 30% at night.

Juffer presented the runway use year-end summary. 50.1% of all arrivals used a high-priority runway in 2016. Runway 35 arrivals dropped to under 10,000 arrivals, short of 5% of all the arrivals at MSP. As a result, arrivals on Runways 30L and 30R were not balanced as Runway 30L took more of the arrivals that would have previously used Runway 35. Runway 12R was used slightly more than 12L as arrivals to that runway can be spaced closer together than they are on 12R. 56.5% of all departures used the high-priority runways. Runway 17 handled 1/3 of all departures at MSP for 2016 with 23% of the departures on the 12s.The 30s saw a slight imbalance of departures with 22.2% on the North parallel and 21.1% on the South. This imbalance is also the result of CRO as ATC favored arrivals on the South parallel and departures on the North parallel during peak traffic hours. The overall use of high priority runways for 2016 was 53.3%

Representative Olson, Minneapolis, asked for a reminder on what the Mixed-A flow is. **Juffer** responded that the Mixed A is when arrivals are on Runways 30L and 30R with departures mostly on 17 and some on Runways 30L and 30R, depending on the aircraft destination.

4. Update on Converging Runway Operations-Kurt Mara, FAA Traffic Management Officer

Kurt Mara, FAA Traffic Management Officer, reported that FAA at MSP isn't in a settled state with CRO but the hope is by spring 2017, they will be more settled. In September the FAA conducted a safety risk management review of using the simultaneous independent arrival departure windows (ADWs). **Mara** explained, there is one ADW for Runway 30R and a second and separate ADW for Runway 30R. The converging runway point for the first ADW is in the sky above Mother Lake. The second convergence point is over Lake Nokomis. Considering all the factors and requirements, the risk management review decided it was very minimal risk to safety and said that with the mitigation in place, the procedures are approved. After that there was training simulated for air traffic controllers. In January the ATC Tower started using both ADWs at the same time. The tower has started to tweak the process a bit to make everything more efficient and safer. The balance of the runway use was off and with this new process, the departures are more evenly distributed on 30L/30R. This will also reduce departure delays. Depending on winds and weather, with this new procedure, ATC will stay in north flow all day long. This will help improve the throughput capacity and the air and ground delay will be reduced. On the Alternative Means of Compliance Waiver, the FAA Central service area had been working to determine a northern departure heading off of 30R that avoids the virtual intersection point. The original request required more information and the research shows that the tracks are not consistent enough. At this point, this option is not actively being pursued.

Representative Olson, Minneapolis asked **Mara** what percentage of the departures will be utilizing the runways. **Mara** responded that it's typically 50/50 but also is dependent on what the

aircraft destination is. He said that 30L is favored a bit more since there are more south destinations. **Olson** then asked what percentage of flights will be on the north flow versus the south flow. **Mara** responded that if you look at historical data (prior to 2015) there is a pattern of 60% north flow and 40% south flow, depending on winds, weather, and patterns. Due to CRO, that has flipped to be about 60% south flow and 40% north. Moving forward, the goal is to be as close to 50/50 as possible but there may still be more departures to the northwest. **Representative Goss, Delta,** made a comment related the departures on 30L and the fanning of the tracks and if **Mara** had seen other airports with runways that made this same pattern that took other measures to encourage the departures to follow the tracks. **Mara** said that there are a lot of questions about who follows the procedure, when do they follow it, who regulates it etc. The focus is to refine the current process but exploring that may be an option in the future. **Dana Nelson**, **Technical Advisor,** mentioned there was an email sent out with a memo from Barry Cooper, FAA Regional Manager, in response to a resolution that was passed by the NOC. Barry acknowledged the resolution, the environmental impacts of CRO, the impacts of capacity as a result of CRO, as well as a recognition of the strong partnership between NOC and FAA and the importance for that to continue.

5. Noise Program Communication Enhancement Plan Update

Dana Nelson, Technical Advisor, updated the group on the noise enhancement program as well as the 4 tactics. The first being the noise videos, of which the first has been published. The noise office has created brochures for residents explaining what it means to live by the airport and the roles and responsibilities of the MAC and FAA. Another tactic was the community engagement plan, that included interviews and public input. That feedback created a change in the format for the Public Input Meetings which are now being called Listening Sessions. The schedule is the same and will be held quarterly. The spring and summer sessions will be held in the community and invite opportunities for that. The agenda, announcements, and calendar details will continue. Attendees of the meeting will be invited for more participation to foster engagement for everyone in the meeting. Then there will be a presentation as well as a two way dialogue instead of the response via letter at a later date. As part of these meetings, some communities have a break out session as a part of the meeting and the noise office would like discussion on that idea as well as other input and suggestions. **Representative Olson, Minneapolis**, applauded the noise team on the history of engagement as well as making it a priority for the future. Since there aren't going to be documented responses to the questions, **Representative Olson** suggested an audio recording or minutes taken at the meeting.

6. Evaluate Steeper Glide Slopes for Aircraft Arrivals

Dana Nelson, Technical Advisor, reminded the group that part of the 2017 NOC work plan included an investigation into steeper glide slopes; this was a result of studies taken place in Europe. Instrument Landing System (ILS) is comprised of the glide slope to provide vertical guidance as well as a localizer to provide lateral guidance. ICAO set an international standard to be 3 degrees. Some airports user higher slopes due to terrain. Two international airports have analyzed or implemented another glide slope with the goal of noise reduction. Frankfurt has a 3.2 degree slope for their new runway and London Heathrow conducted a 6 month trial of a 3.2 degree glide slope; the latter is not operational yet. After a simulation trial, Frankfurt showed that a 3.2 degree glide slope allowed aircraft to be 246 feet higher when they intercepted the ILS. They also deduced that anything above 3.2 degrees required procedural changes that negated the goal of reduced noise from flying higher. Frankfurt then installed 2 additional ILS systems at the cost of 3.5 million dollars which brought the total on that runway to 4. After 2 years of use and daily noise monitoring the 7 noise monitors recorded noise reductions between 0.56dB and 1.5dB. The human ear can only perceive a reduction of 3dB. In 2014 the 3.2 degree glide slope became standard for that runway.

London Heathrow preformed a 6 month trial of the 3.2 degree slope by amending the existing RNAV procedure. The pilot had the option to fly the RNAV 3.2 degree slope or the traditional ILS 3.0 degree glide slope based on weather conditions. During the trial they had 2.2% participation in the 3.2 degree RNAV arrival procedure. The height improvements were lower than expected. ATC and pilots reported that following the procedure did not impact their ability to manage speed, nor did it increase the number of go-arounds, nor did it increase workloads. Noise data was collected and their reduction range was 1.4dB to a slight increase based on the noise monitor location. The average decrease was a 0.5dB reduction. Based on this, London Heathrow plans to add the 3.2 degree glide slope in their proposal to their government while they redesign the current airspace. Looking at MSP airspace and the 3.2 degree glide slope for arrivals would make aircraft 128 feet higher at about 6 miles from the airport. Noise monitoring data from St Louis Park was collected and based on the most common aircraft arriving on the 12s, the average dB rating is 69.1. **Representative Goss, Delta,** asked for clarification on the decrease in noise at the two airports. **Nelson**, responded between a 0.5dB and 1.5dB. **Goss** stated that Frankfurt spent 3 million dollars on that level of reduction and **Nelson** clarified that the entire project at Frankfurt was 3.3 million dollars. **Goss** followed up by stating that he had a number of concerns if this became a proposal at the MAC.

7. Second Amendment to the Consent Decree Update

Dana Nelson, Technical Advisor, A handout was provided at the start of the meeting to the NOC members containing a letter from the MAC legal department to the parties of the Consent Decree, stating that it has been approved by all parties and the FAA as a permissible use of airport revenue. This means the airport will switch from the Integrated Noise Model (INM) tool to the Aviation Environment Design Tool (AEDT), the FAA's new tool of evaluating noise impact. Clarification on opt out provisions is in the amended Consent Decree as well. If a home owner had previously opted out of the partial program and becomes eligible for the full 5dB reduction program, they may participate. Next, the amendment will go to the Hennepin County Court and need to be approved, that date will be set soon. Then the noise team will move forward with the 2016 annual noise contour report will be done in AEDT. This all couldn't have come together without the help of Loren Olson and John Quincy from Minneapolis, Dianne Miller from Eagan, and Pam Dmytrenko from Richfield.

8. Public Comment Period

Representative Olson, Minneapolis, introduced resident **Peter Nussbaum** to speak in front of the NOC. Nussbaum lives east of Lake Harriet in Minneapolis and is placed between 12L and 12R however is not qualified for noise mitigation. The RMT located near his home has recorded aircraft events over 65dB have increased from 3,300 in June 2015 to 4,200 in June 2016. **Nussbaum** joined MSP Fair Skies to advocate solutions and transparency for noise mitigation.

The glide slope was a big disappointment because of the discrepancy between the anticipated noise reduction and the actual reduction when results came in from Frankfurt and Heathrow. However, **Nussbaum** would like to see the MAC pursue other option for mitigation that are used in Europe, such as Amsterdam's landscaping project to reduce noise pollution. Many European airports offer financial disincentives for evening and nighttime flights and he would like a greater understanding of why that isn't happening at MSP. Another financial disincentive used in Europe is for noisier aircraft, related to that, **Nussbaum** asked if the new A321s have the new engine option or if they have the old option**. Chair Hart, Delta,** responded that they do not have the new engine option but that they are coming with vortex generators. **Representative Goss, Delta,** added that there will be baffling in the exhaust which makes them quieter than the 319s and 320s. **Nussbaum** continued

that current noise impact research says that 55dB should be the standard and as such is requesting that the MAC publish the 55dB contours as part of their monthly report and in addition to that, publish the 55dB N^X (number of events that exceed a certain noise threshold) and also mentioned the need for the airport to charge differential landing fees as a noise reduction tactic. **Dana Nelson, Technical Advisor,** responded that there are certain grant assurances imposed on an airport that uses federal funding for operations. Part of these grant assurances is that the airport cannot unjustly discriminate who uses the airport, or make decisions that would place an undue burden on interstate commerce. This is why the airport can't impose differential landing fees based on aircraft type or based on the time of day. In order to do any of that, the airport would need to go through a Part 161 study, that's an application process to the FAA. That came from the Airport Noise and Capacity Act of 1990. Thus far, airports that have applied for a 161 restriction have not been approved. Some airports that had curfews or restrictions prior to the act of 1990, had those grandfathered in when the act took place. The landscaping option is on the 2017 NOC work plan. **Olson** followed up by saying that the FAA is undertaking an effort to look at how they can measure noise differently. The NOC has that on their 2017 work plan as well.

9. Announcements

Chair Hart, Delta, announced that the world's largest cargo carrier just landed at MSP and is scheduled to depart MSP at 2:30am.

10. Adjourn

The meeting adjourned at 3:02p.m.

The next meeting of the NOC is scheduled for Wednesday, 15 March 2017.

Respectfully Submitted,
Amie Kolesar, Recording Secretary

ITEM 2

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Bradley Juffer, Assistant Manager—Noise, Environment & Planning

SUBJECT: **REVIEW OF MONTHLY OPERATIONS REPORTS**

DATE: March 1, 2017

Each month the Metropolitan Airports Commission (MAC) produces a Technical Advisor's Report for the Noise Oversight Committee (NOC). This report provides information on the Minneapolis-St. Paul International Airport (MSP), such as aircraft noise complaints, aircraft operations and noise levels associated with MSP aircraft operations.

Additionally, the MAC produces four monthly reports assessing the compliance with established noise abatement procedures: the Runway 17 Departure Analysis Report, the Eagan-Mendota Heights Corridor Report, the Crossing-in-the-Corridor Analysis and the MSP Runway Use System (RUS) Report.

At the March 15, 2017 NOC meeting, MAC staff will provide a summary of these five monthly operations reports for the months of January and February, 2017.

ITEM 3

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Bradley Juffer, Assistant Manager—Noise, Environment & Planning

SUBJECT: **REVIEW FORMAT OF MONTHLY OPERATRIONS SUMMARY REPORT**

DATE: March 1, 2017

In an effort to be more helpful to members of the public reading the Noise Program Office monthly reports and due to existing report technology approaching end-of-life, staff has formatted a new monthly operations summary report. This summary provides a high-level account of the five reports published by the MAC Noise Program Office each month: the Technical Advisor's Report, the Runway 17 Departure Analysis Report, the Eagan-Mendota Heights Corridor Report, the Crossing-in-the-Corridor Analysis and the MSP Runway Use System (RUS) Report.

In total, these reports are over 80 pages in length. To share a brief summary in an easy to access and comprehend format, staff has condensed this down to a four-page summary. Aircraft noise complaints, operations, sound monitoring and noise abatement procedures, each has a page in the consolidated summary.

Additionally, the current technology that is used to develop the five monthly reports is approaching end-of-life. To ensure we continue to use the most reliable, supported and advanced technology, we plan to replace the five monthly reports with a method to interactively retrieve the data through our website. Users will start with an interactive view of the monthly operations summary report and be able to hover, click and export data tables to drill down deeper into the data.

Staff will continue to produce and publish the five monthly reports as PDFs on macnoise.com until all interactive capabilities are built-out on the website and they are reviewed and approved by the Committee at the May 17th NOC meeting.

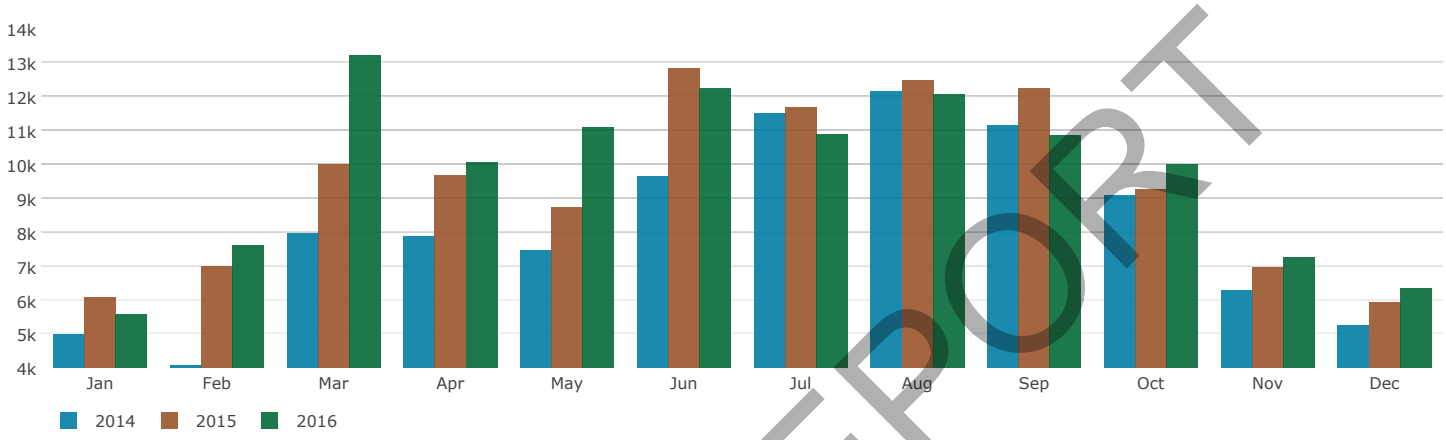
Attached is a static sample of the monthly operations summary report for December 2016. At the March 15, 2017 NOC meeting staff will be seeking approval of the summary report format.

REQUESTED ACTION

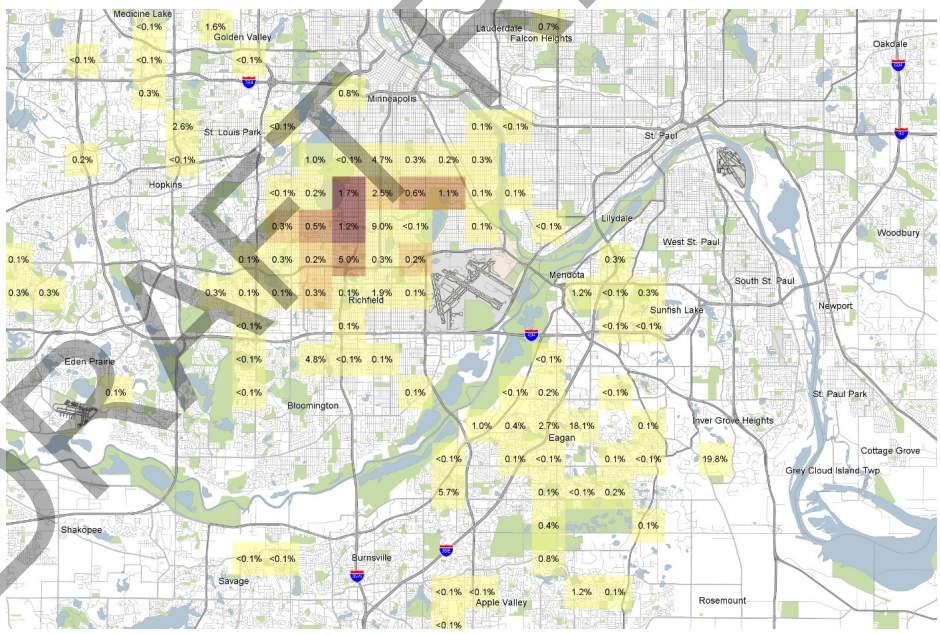
APPROVE THE MONTHLY OPERATIONS REPORT SUMMARY FORMAT.

MSP COMPLAINTS DECEMBER 2016

COMPLAINTS	LOCATIONS			MOST FREQUENT
Total	Total			Hour
6,318	**183**			**8:00 PM (13%)**
Operations per Complaint	New Locations	Average Complaints	Median Complaints	Day
5.2	**26**	**34**	**4**	**Thursday (19%)**



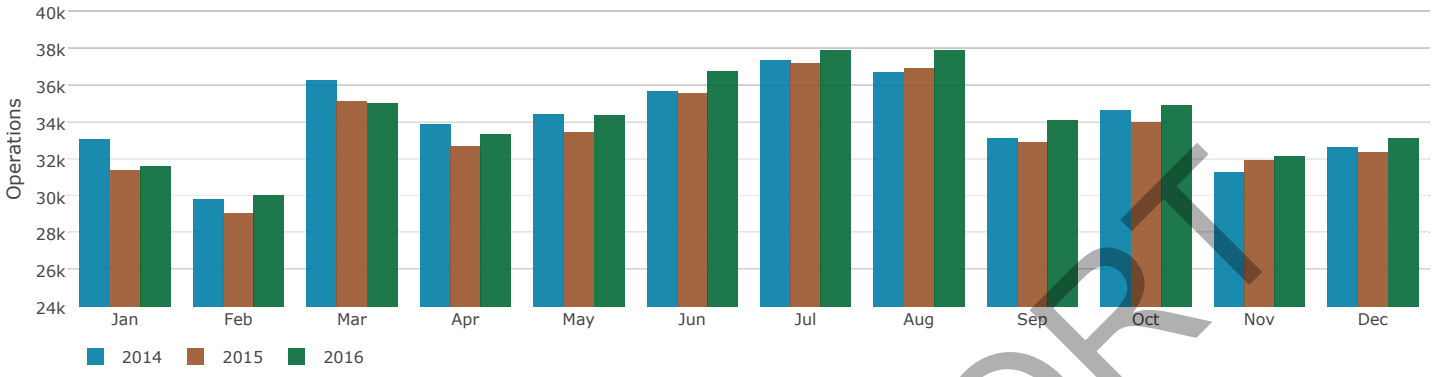
COMPLAINT LOCATIONS



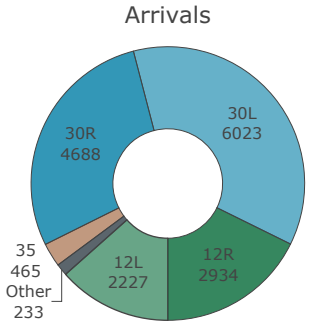
TOP 5 CITIES	Minneapolis	Eagan	Richfield	Burnsville	Inver Grove Heights
	2,192 Complaints	**1,129** Complaints	**751** Complaints	**710** Complaints	**657** Complaints
	75 Locations	**19** Locations	**16** Locations	**8** Locations	**3** Locations

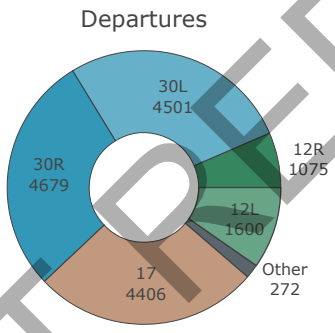
MSP OPERATIONS DECEMBER 2016

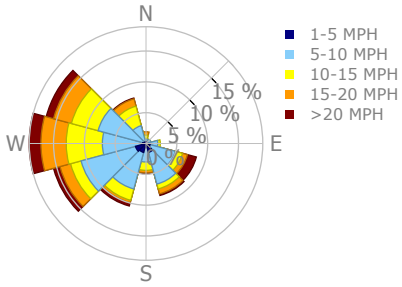
33,103	2,152	410,887
Operations	Nighttime Operations (10:30 PM - 6:00 AM)	Year to Date Operations



RUNWAY USE



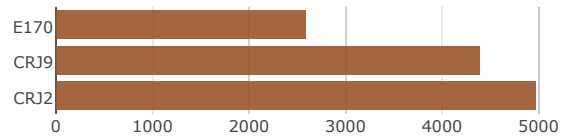


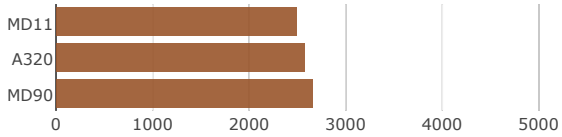


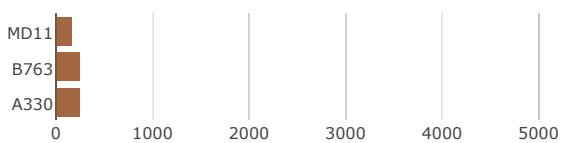
RUNWAY FLOW	North	South	Mixed
	41%	32%	17%

CARRIER JET FLEET MIX

44%	53%	3%







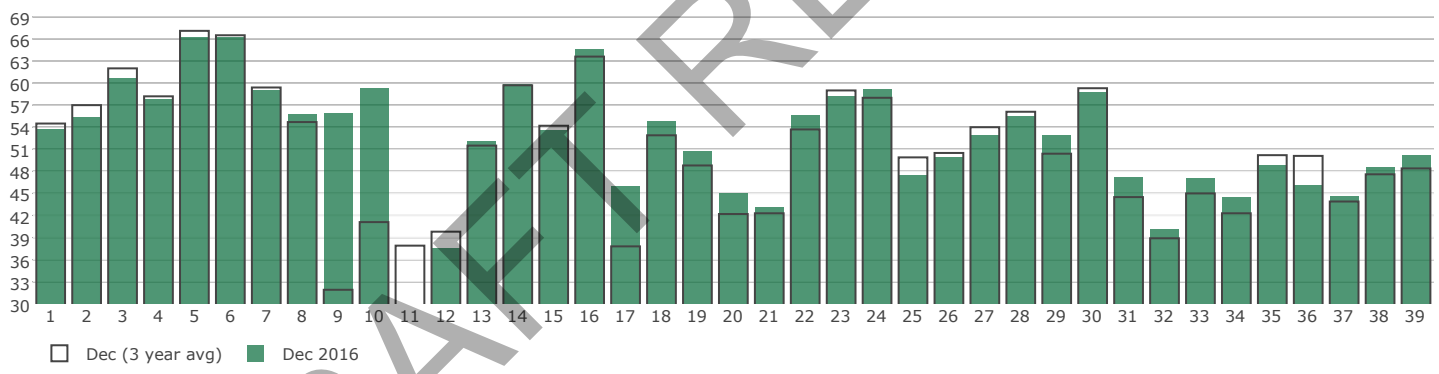
TOP 3 BY CATEGORY

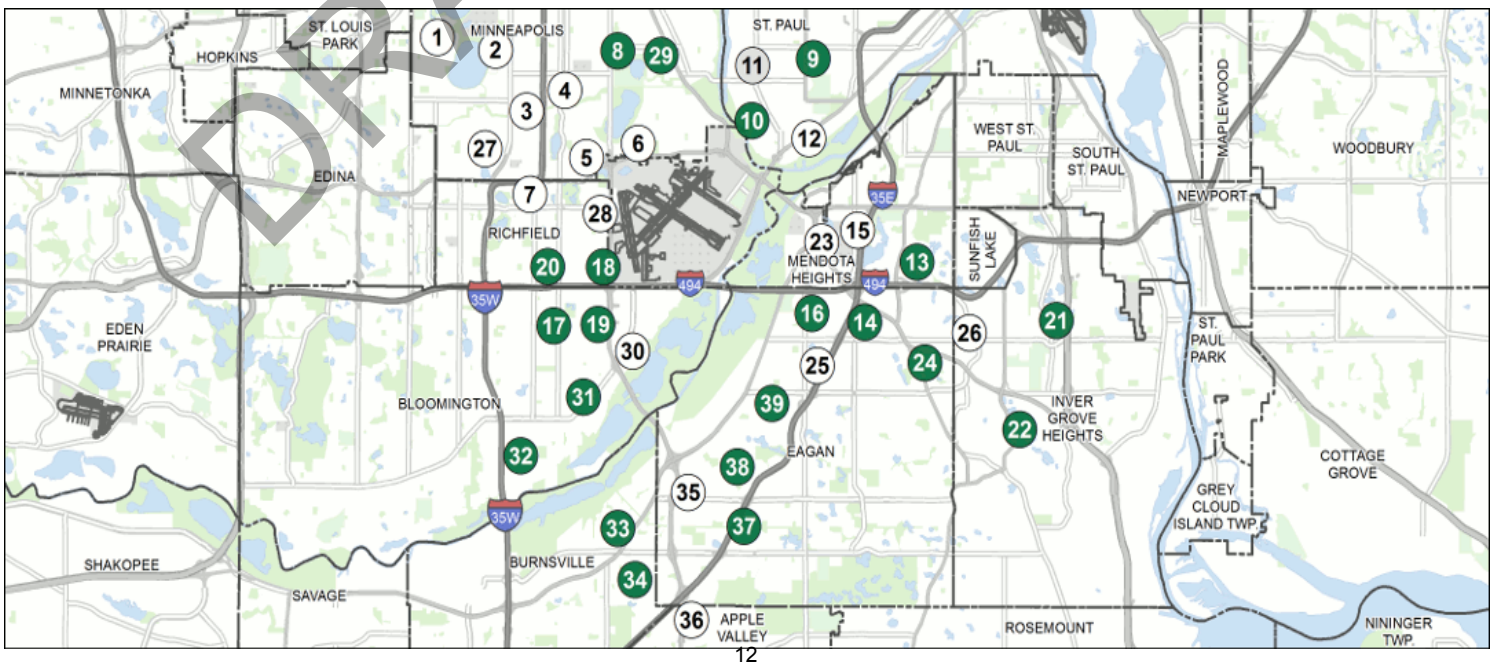
MSP SOUND MONITORING DECEMBER 2016

Time Above (TA^x)	**42_s** TA^{65} per operation	**$388_h\ 6_m$** TA^{65}	**$11_h\ 59_m$** TA^{80}	**11_m** TA^{90}	**3_s** TA^{100}
Count Above (N^x)	**2.33** N^{65} per operation	**77,097** N^{65}	**9,300** N^{80}	**177** N^{90}	**1** N^{100}

COUNT ABOVE	CARRIER JET CONTRIBUTION	TIME ABOVE
25% 19,587	REGIONAL 	**22%** $8_h\ 25_m$
64% 49,435	NARROW-BODY 	**65%** $251_h\ 58_m$
5% 4,090	WIDE-BODY 	**6%** $24_h\ 28_s$

AIRCRAFT DNL BY SITE





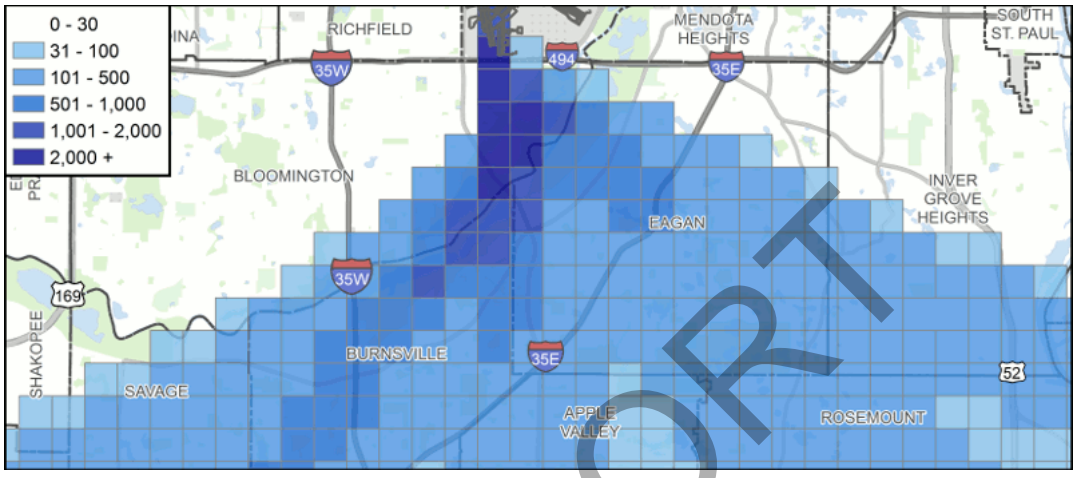
MSP NOISE ABATEMENT DECEMBER 2016

RUNWAY 17 DEPARTURE PROCEDURE (CARRIER JET)

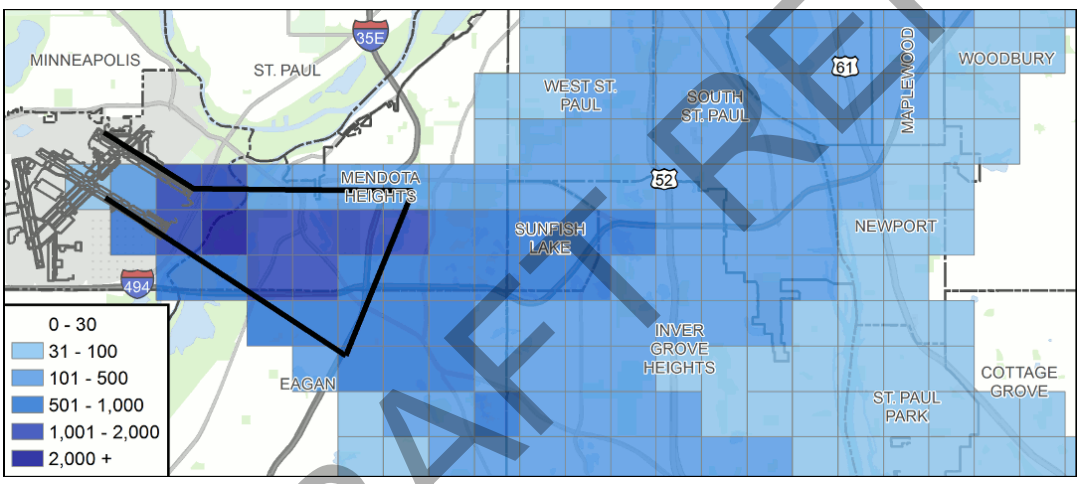
4,150
Runway 17 Departures

99.1%
Compliance Rate

2
Nighttime Deaprtures



EAGAN-MENDOTA HEIGHTS CORRIDOR PROCEDURE (CARRIER JET)



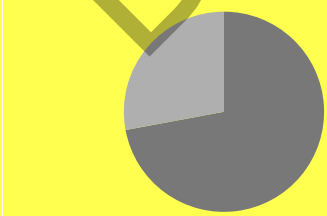
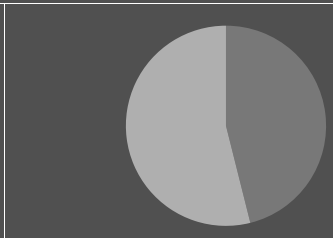
2,475
Departures

94.9%
Compliance Rate

38
Departures North of the Corridor

87
Departures South of the Corridor

CROSSING-IN-THE-CORRIDOR PROCEDURE (CARRIER JET)

DAY (6AM - 11PM)			NIGHT (11PM - 6AM)		
CROSSED		DID NOT CROSS	CROSSED		DID NOT CROSS
659		1,701	62		53
27.9%		72.1%	53.9%		46.1%

MSP RUNWAY USE SYSTEM (RUS)

ARRIVAL RUS USAGE	TOTAL RUS USAGE	DEPARTURE RUS USAGE
55.2%	43%	67%

ITEM 4

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Dana Nelson, Manager—Noise, Environment & Planning

SUBJECT: **UPDATE ON CONVERGING RUNWAY OPERATIONS – KURT MARA, FAA TRAFFIC MANAGEMENT OFFICER**

DATE: March 1, 2017

At the March 15, 2017 NOC meeting, Federal Aviation Administration (FAA) Traffic Management Officer, Kurt Mara will provide an update on the agency's efforts mitigate the effects of Converging Runway Operations (CRO) at Minneapolis-St. Paul International Airport (MSP).

ITEM 5

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Dana Nelson, Manager—Noise, Environment & Planning

SUBJECT: **UPDATE ON RNAV STAR ADJUSTMENTS – KURT MARA, FAA TRAFFIC MANAGEMENT OFFICER**

DATE: March 1, 2017

Beginning in the fall of 2015, the Federal Aviation Administration (FAA) began reviewing the Area Navigation (RNAV) Standard Terminal Arrival Routes (STARs) at MSP. The review focused on the safety and the built-in separation, capacity, efficiency and the fly-ability of the routes. The FAA's review identified some procedure adjustments within the airspace of MSP. Throughout 2016, the FAA worked with the NOC to ensure these adjustments were communicated to the public. Aircraft began using the adjusted procedures on January 5, 2017.

At the March 15, 2017 NOC meeting, FAA Traffic Management Officer, Kurt Mara will provide an update on the implementation of RNAV STAR adjustments at Minneapolis-St. Paul International Airport (MSP).

ITEM 6

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Dana Nelson, Manager—Noise, Environment & Planning

SUBJECT: **2016 ACTUAL NOISE CONTOUR REPORT AND CONSENT DECREE AMENDMENT MITIGATION ELIGIBILITY**

DATE: March 1, 2017

In October 2007, the Metropolitan Airports Commission (MAC) and the cities of Minneapolis, Richfield and Eagan, received judicial approval of a Consent Decree that provided settlement of the noise mitigation lawsuits filed in 2005. Among the several conditions of the Consent Decree, the MAC was required, by March of each calendar year, to prepare an Annual Noise Contour Analysis that reflects an assessment of actual noise generated by operations at Minneapolis-St. Paul International Airport (MSP).

The first amendment to the 2007 Consent Decree was initiated in 2013 and provides terms and conditions that extend the Noise Mitigation Program out to the year 2024 and new eligibility requirements for participation in the program. Eligibility is now based on actual noise contours prepared for MSP on an annual basis. To be eligible, a home must be located within the actual 60 DNL noise contour and exposed to a higher noise mitigation eligibility area when compared to its status relative to the previous noise mitigation program for a total of three consecutive years. The first of the three years must occur by 2020. The Full 5-decibel Reduction Package is offered to single-family homes meeting these criteria inside the actual 63 DNL noise contour while the Partial Noise Reduction Package is offered to single-family homes in the actual 60-62 DNL noise contours. A Multi-Family Noise Reduction Package is offered to multi-family units within the actual 60 DNL noise contour. Homes will be mitigated in the year following their eligibility determination. The 2013 actual contour marked the first year in assessing this amended mitigation program.

A second amendment was made to the 2007 Consent Decree in 2017. This amendment allows the use of the Aviation Environmental Design Tool (AEDT) to run the actual noise contours each year, beginning with the 2016 actual noise contour. In 2015, AEDT became the federally-approved computer model for determining and analyzing noise exposure and land use compatibility issues around United States airports. The second amendment also provided clarity on the Opt-Out Eligibility criteria. Specifically, single-family homes that previously opted out of the Partial Noise Reduction Package may participate in the Full 5-decibel Reduction Package, provided the home meets the eligibility requirements.

Based on the 412,898 total operations at MSP in 2016, the actual 60 DNL contour is approximately 29 percent smaller than the 2007 forecast contour and the 65 DNL contour is approximately 39 percent smaller than the 2007 forecast contour. The predominant contraction in the contours from the 2007 forecast to the 2016 actual noise contour scenario is driven largely by fleet mix changes, including over a 99.9 percent reduction in Hushkit Stage 3 aircraft operations and a 29 percent reduction in total aircraft operations. However, there continues to be a small area in South Minneapolis where the 2016 actual noise contours extend beyond the 2007 forecast

noise contours establishing first, second, and third year impacts in certain residential areas above their noise mitigation eligibility impact levels under the terms of the 2007 Consent Decree. This expansion of noise impacts can largely be attributed to nighttime runway use variances between what was forecasted for 2007 and what actually occurred in 2016, particularly an increase of the nighttime arrival operations on Runway 12R. This same trend existed in 2013 and 2014.

The 2016 actual noise contour includes 320 single-family homes within the first year of eligibility for the Partial Noise Reduction Package. Of these homes, 296 were previously outside the program area and 24 were previously eligible for homeowner reimbursements. The 2016 actual noise contour includes another 123 single-family homes within the first year of eligibility for the Full 5-decibel Reduction Package. These homes were previously located inside the Partial Noise Reduction Package area. Additionally, there are 149 multi-family units which were previously outside the mitigation program area and are now located in the 2016 actual 60 DNL noise contour. If these 443 total single-family homes and 149 multi-family units remain in a higher noise impact area compared to the previous noise mitigation program for two more consecutive years, they will be eligible for mitigation in 2020.

All single-family homes that met the first year of eligibility in the 2015 actual noise contour achieved a second consecutive year of increased noise impact with the 2016 actual noise contour. There are 251 single-family homes within the second year of eligibility for the Partial Noise Reduction Package. Of these homes, 177 were previously outside the program area and 74 were previously eligible for homeowner reimbursements. The 2016 actual noise contour includes another 234 single-family homes within the second year of eligibility for the Full 5-decibel Reduction Package. There are no multi-family units within the second year of eligibility. If these 485 total single-family homes remain in a higher noise impact area compared to the previous noise mitigation program by virtue of the 2017 actual noise contour, they will be eligible for mitigation in 2019.

All single-family homes that met the second year of eligibility in the 2015 actual noise contour achieved a third and final year of increased noise impact with the 2016 actual noise contour. There are 165 single-family homes eligible for the Partial Noise Reduction Package. Of these homes, 126 were previously outside the program area and 39 were previously eligible for homeowner reimbursements. These single-family homes are eligible for one of two mitigation options, as detailed in Section 9.5(b) of the first amendment to the 2007 Consent Decree. The 2016 actual noise contour includes another 121 single-family homes that are eligible for the Full 5-decibel Reduction Package. There are no multi-family units within the third year of eligibility. These 286 total single-family homes are eligible to receive mitigation in 2018.

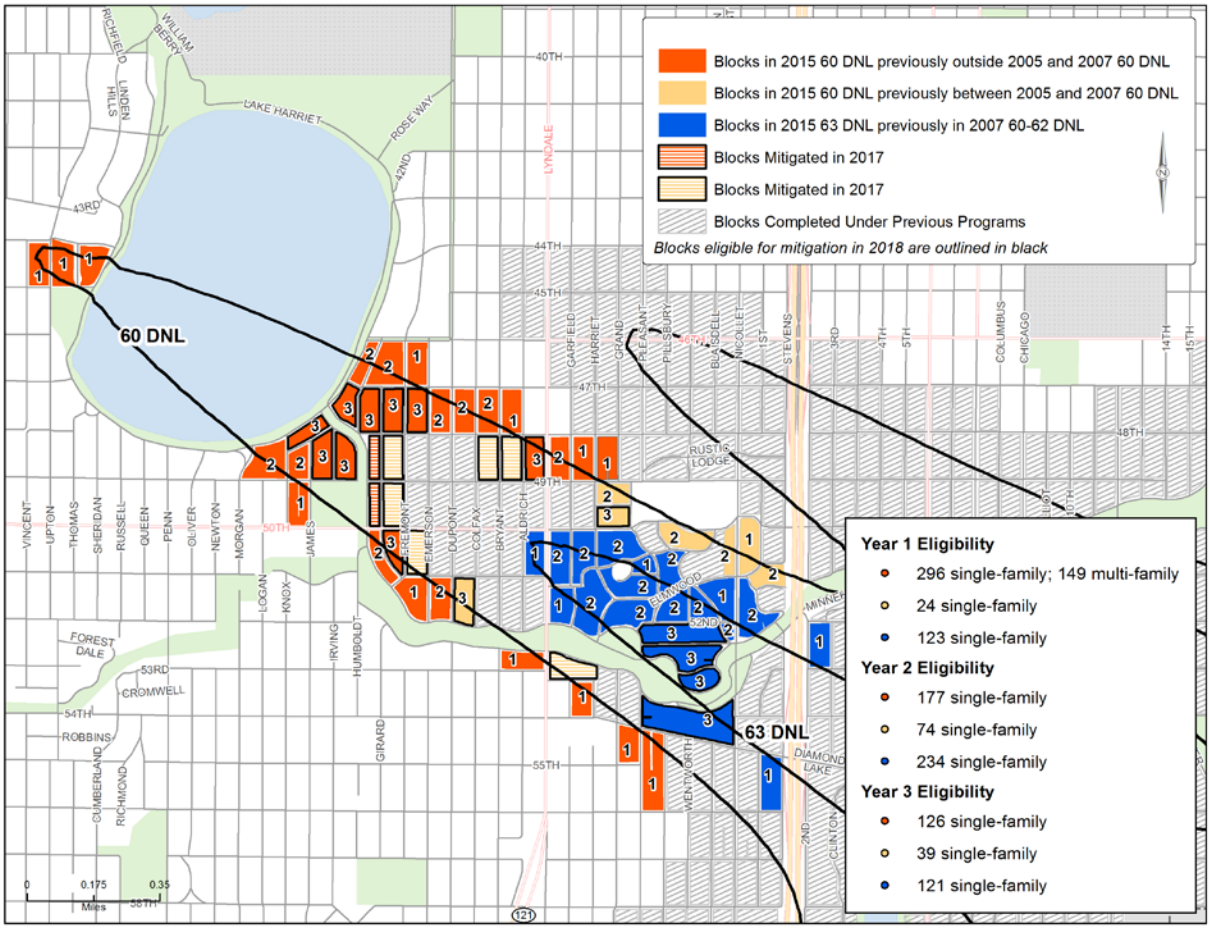
In cases where homes have received previous reimbursements or mitigation from the MAC, those improvements will be deducted from the efforts required to increase the home mitigation relative to the actual noise level, per the amended Consent Decree.

In 2017 the MAC began the project to provide mitigation to 138 single-family homes and 88 multi-family units that became eligible by virtue of the 2015 actual noise contour. Similarly, in late 2017 the MAC will begin contacting the homeowners of the 286 single-family homes that are eligible for mitigation in 2018.

All blocks meeting the first, second and third consecutive year(s) of eligibility in the 2016 actual noise contour are in the City of Minneapolis, as shown in the graphic below.

The 2016 MSP Annual Noise Contour Analysis is available at: https://www.macnoise.com/pdf/msp-2016-annual-noise-contour-report.pdf.

The graphic below shows the 2016 60 dB DNL and 63 dB DNL noise contours as well as these contours' effects on the mitigation program eligibility. MAC staff will provide an update on this topic at the March 15, 2017 NOC meeting.



Blocks are labeled with the years of candidate eligibility. The blocks labeled with the 3 are those that are eligible for mitigation in 2018.

Red blocks are those that were previously outside any previous mitigation area and are inside the Partial Mitigation Package area.

The orange blocks are those that were previously inside the mitigation reimbursement area and are now inside the Partial Mitigation Package area. Any previous reimbursements paid would be deducted from the dollar allocation for the Partial Mitigation Package.

The blue blocks are those that were previously eligible for the Partial Mitigation Package and are now inside the Full 5-decibel Mitigation Package area. The value of previous mitigation provided to the home would be deducted from the Full 5-decibel Package.

ITEM 7

MEMORANDUM

TO: MSP Noise Oversight Committee (NOC)

FROM: Dana Nelson, Manager—Noise, Environment & Planning

SUBJECT: **EVALUATION OF DISTANT NOISE ABATEMENT DEPARTURE PROFILE (NADP) USE AT MSP**

DATE: March 1, 2017

Air carriers use Distant NADPs off all runways at MSP, per the recommendation by the Metropolitan Aircraft Sound Abatement Council (MASAC) in 2000, which – after extensive research – was reaffirmed by the NOC in 2003 and again in 2012. At the request of community members and MSP FairSkies, the NOC added an item on its 2017 Work Plan to evaluate the use of the Distant NADP at MSP.

This memo details the origins of NADPs, historical NADP evaluations and decisions at MSP and ends with addressing recent NADP questions at MSP. At the March 15, 2017 NOC meeting, MAC staff will provide an update on this topic.

Origins of NADPs – Federal Aviation Administration AC 91-53A

In 1993, the FAA published an Advisory Circular (AC 91-53A) which established a process for the development and implementation of NADPs. The purpose of AC 91-53A was to establish a standardized system so that an aircraft will use the same operating procedures throughout the country. Each airline develops specific procedures for flying NADPs that must comply with the AC and go through an approval process with by the FAA.

The AC establishes a protocol for both a Close-In (NADP 1) and Distant (NADP 2). Airports are permitted to decide the appropriate NADP to use on each end of its runways. Unless otherwise instructed, airlines will use the Distant NADP.

The Close-In NADP generally is intended to reduce noise slightly for communities within the immediate vicinity of the runway end – approximately 3.5 miles from the start of takeoff roll – while the Distant NADP is intended to reduce noise slightly for other communities that are not within the immediate vicinity of the runway end (beyond 3.5 miles from the start of take-off roll).

When using a Close-In NADP, an aircraft reduces thrust sooner and maintains takeoff flaps longer than it would when using a Distant NADP. This results in a slightly quicker climb and allows the aircraft to “pop” up over communities close to the airport and reduce noise exposure slightly for homes within the immediate vicinity of the airport. After reaching 3,000 feet, a Close-In NADP aircraft must substantially reduce its rate of climb and accelerate to a sufficient airspeed to retract flaps and slats. Although the aircraft is slightly higher, it is also slower and at a higher thrust setting than an aircraft using a Distant NADP. Beyond the immediate vicinity of the airport, this results in a slight increase in noise exposure. For the modern high-performance jet aircraft that we see operating at MSP today, the noise impact difference between the Close-In and Distant NADPs is minimal.

History of NADPs at MSP

In 1997, the Metropolitan Aircraft Sound Abatement Council (MASAC) endorsed the use of the Close-In NADP on Runways 30L and 30R, and the use of the Distant NADPs on all other runways at MSP. The use of Close-In off runways to the northwest was predicated on the existence of Stage 2 aircraft at the time. The benefits of the Close-In NADP are greatest when used by Stage 2 and hushkit Stage 3 aircraft. During the 1997 decision, MSP aircraft operations included approximately 51% Stage 2 operations and only 49% manufactured Stage 3 operations. As the MSP aircraft fleet transitioned to all Stage 3 aircraft, the benefits of the Close-In NADP also diminished.

During the Part 150 Update process in 2001, MASAC conducted an extensive analysis to establish the appropriate NDADP for each runway end considering the present and future trends in aircraft fleet. Based on the MASAC analysis, they determined that noise impacts for all communities were minimized by using the Distant NADPs off all runways.

The NOC subsequently endorsed MASAC's position, considering the amount of residential sound mitigation that had been done around MSP at the time and given the shrinking difference in noise impact between the two NADPs as older, Stage 2 aircraft were phased out. In July 2003, Distant NDAPs were put in place off all runways.

In 2012, the NOC directed MAC staff and consultants to conduct another analysis to re-evaluate the use of the NADPs at MSP. The latest edition of the Integrated Noise Model (INM version 7.0c) was used to conduct the analysis. In consultation with Delta Air Lines, MAC's consulting team developed 288 individual aircraft profiles to model Close-In and Distant NADPs. These aircraft profiles represented approximately 80% of the aircraft types utilizing the NADPs at MSP. INM was used to evaluate several noise metrics to compare the two NADPs, including DNL noise contours. The analysis supported the fact that new aircraft types manufactured to be Stage 3 or better diminished the variation between Close-In and Distant NADP noise impacts.

Addressing Recent NADP-Related Questions at MSP

The following are questions or concerns that have been recently raised by members of the public related to NADP procedures at MSP:

- *Are MSP airlines using the Distant NADPs?*

  Yes. The Distant NADPs are used by all air carriers at MSP unless there are circumstances such as equipment malfunctions, emergencies or an aircraft being directed away from thunderstorm activity by Air Traffic Control. Air carriers require their pilots to be evaluated on a regular basis to ensure compliance and show proficiency with the Distant NADP and other airline operating procedures.

- *When I look at the FlightTracker, it does not appear that aircraft are consistently using the same climb-out procedure.*

  The FAA's AC 91-53A provides general guidance for departure procedures at commercial airports across the United States. Ultimately, airlines develop their own procedures according to their operational specifications for each aircraft type.

  The rate of climb and point over the ground where aircraft are reaching altitudes and speeds pursuant to their procedures will very according to multiple factors related to that specific aircraft and environmental conditions. For example, if an aircraft is departing with 100% of its seats filled, it is likely to climb slower compared to the same aircraft model that may only be partially filled. Long-haul and short-haul flights may perform

differently depending on onboard fuel levels. Variations in temperatures, dew points and headwinds will result in different climb performance for aircraft.

- *Do Distant NADPs impact where an aircraft turns?*

  Distant NADPs do not affect where an aircraft turns as it is departing.

- *Can an aircraft follow a Distant NADP procedure if it turns after departure?*

  Yes. If aircraft turns after departure, it is still following the Distant NADP procedure. The NADP refers to the vertical climb profile of the aircraft. An aircraft may make lateral turns while still adhering to the Distant NADP procedures established by each airline.