



Noise Compatibility

3rd Quarter, 2014

Dec 12, 2014

Disclaimer

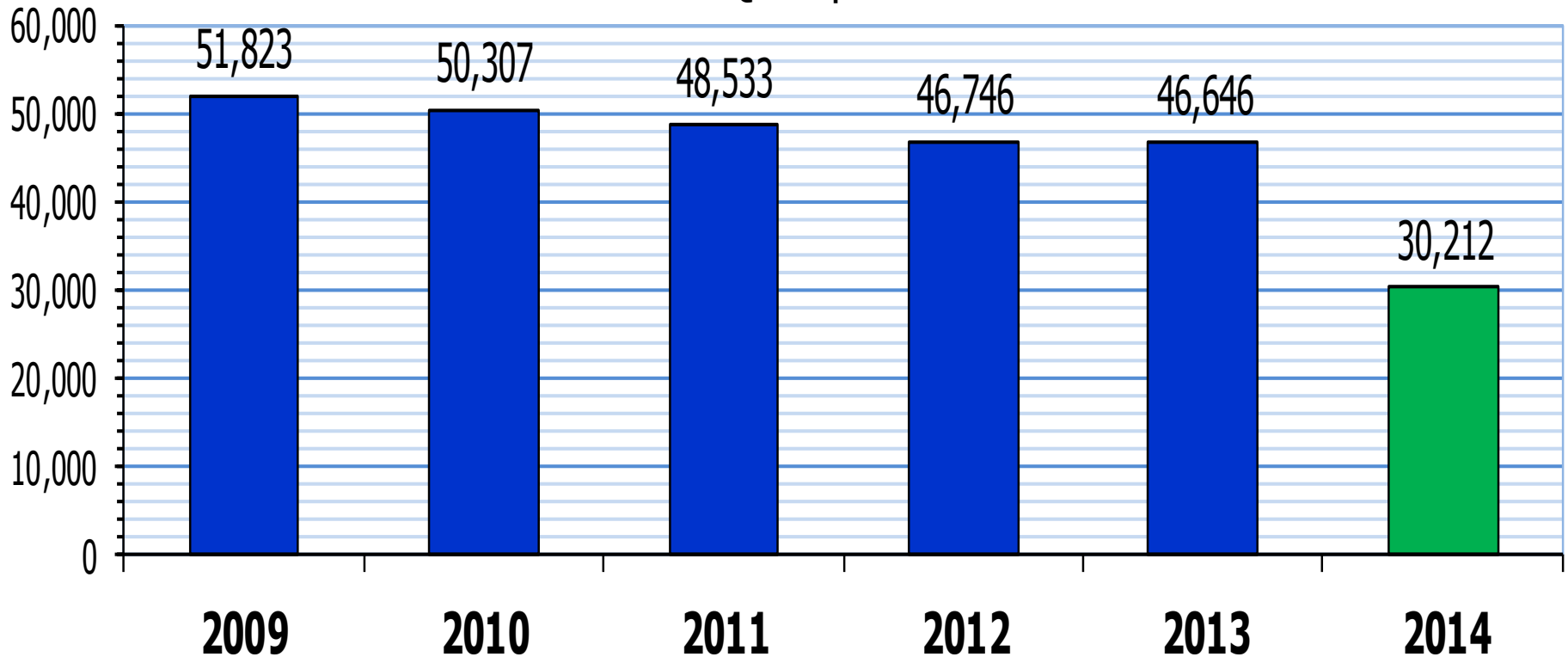


- Adherence to approved noise abatement measures is voluntary and subject to change based on weather, efficiency, and safety.
- Information contained within this report is for informational purposes only. Information cannot be used for enforcement of any Noise Abatement Measure.

Aircraft Operations



Cleveland 3rd Qtr. Operations 2009 - 2014



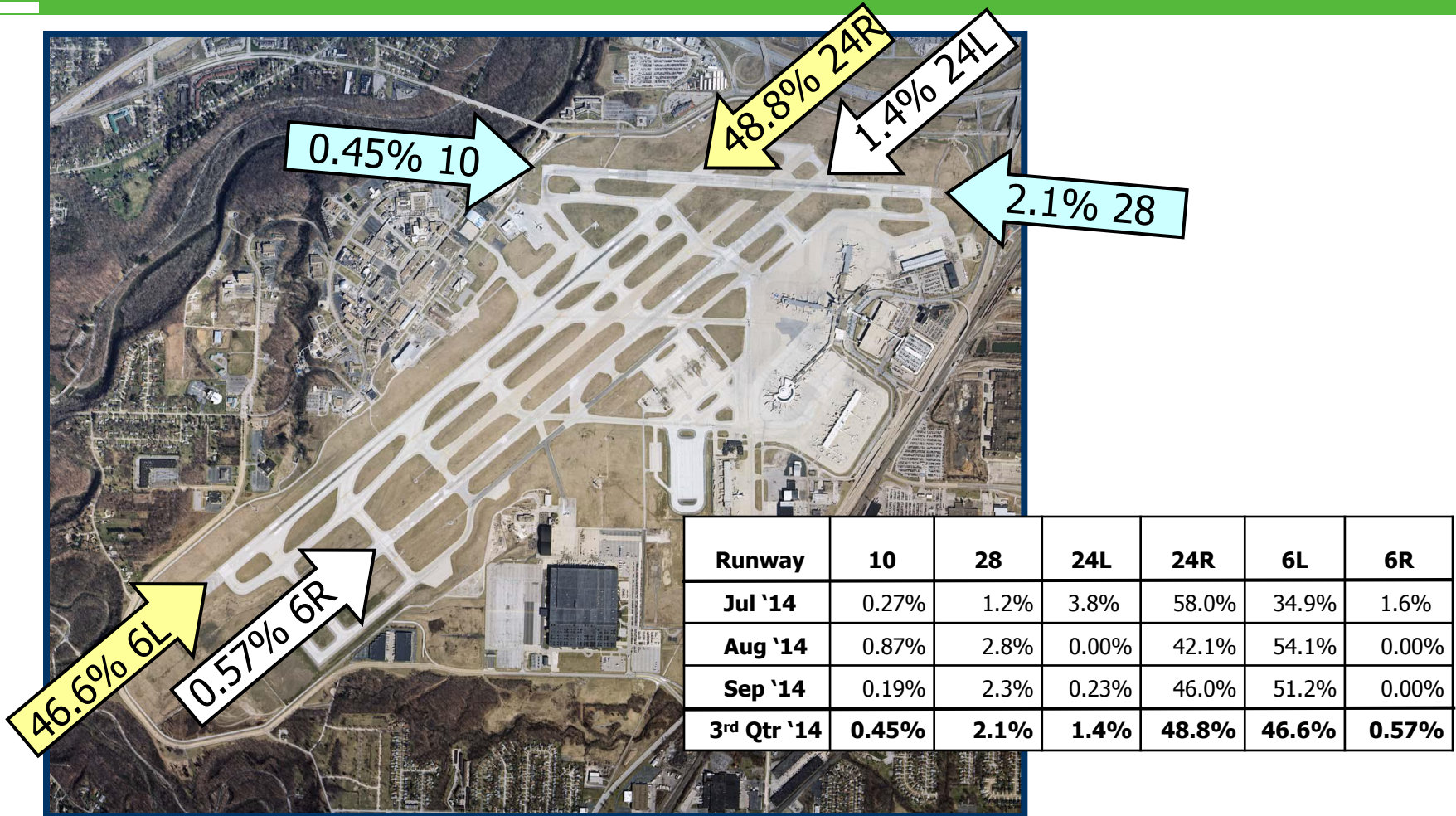
There were 30,212 landings and takeoffs in the 3rd Qtr. 2014; this is 35.2% below the 3rd Qtr. 2013.

Landings & Takeoffs

	3 rd Qtr, 2014		3 rd Qtr, 2013	
Commercial				
-Stage 2 with hush kit	16	0.05%	232	0.50%
-Heavy (incl. all B757s)	621	2.06%	820	1.76%
-MD80 series	609	2.02%	1,002	2.15%
-Other Stage 3	14,457	47.85%	12,112	25.97%
-Regional Jet	7,803	25.83%	21,510	46.11%
-Turboprop	3,726	12.33%	8,412	18.03%
Air Taxi	632	2.09%	386	0.83%
General Aviation	2,285	7.56%	2,132	4.57%
Military	63	0.21%	40	0.09%
Total	30,212	100.00%	46,646	100.00%

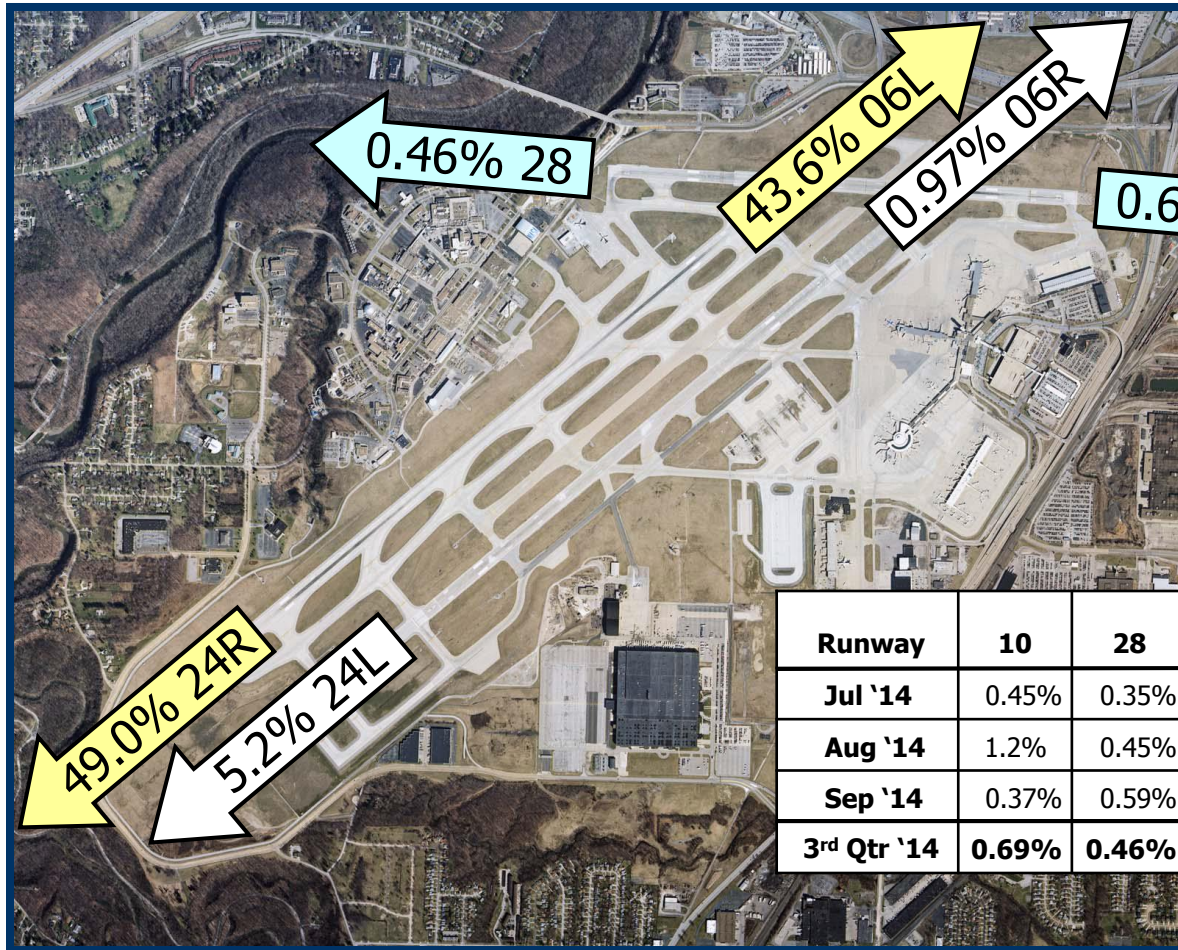
All aircraft above are Stage 3 certified with the exception of some Military and 0.5% of General Aviation (GA) aircraft. Stage 2 GA accordingly is 0.04% of the overall fleet. A hush kit reduces noise enough to meet Stage 3 levels, but well short of the noise level typical of aircraft originally manufactured as Stage 3.

Runway Use: 3rd Qtr, 2014 Arrivals



Totals may be less than 100%, as helicopter operations do not use runways.

Runway Use: 3rd Qtr, 2014 Departures



Runway	10	28	24L	24R	6L	6R
Jul '14	0.45%	0.35%	13.8%	52.8%	29.7%	2.8%
Aug '14	1.2%	0.45%	0.0%	44.9%	53.2%	0.00%
Sep '14	0.37%	0.59%	1.4%	49.3%	48.2%	0.94%
3rd Qtr '14	0.69%	0.46%	5.2%	49.0%	43.6%	0.97%

Totals may be less than 100%, as helicopter operations do not use runways.

Departure Headings – Day-time

Jet Departures, 6:00 a.m. to 11:00 p.m.

A voluntary measure of the Noise Compatibility Program calls for jets departing between 6:00 a.m. and 11:00 p.m. from Runways 6L and 6R to take headings between 360° and 35° when turning left and between 65° and 95° when turning right until the jet is either 5 mi. away from the airport or has gained an altitude of 5,000 ft. above Mean Sea Level (MSL).

Another voluntary measure of the Noise Compatibility Program calls for jets departing between 6:00 a.m. and 11:00 p.m. from Runways 24L and 24R to take headings between 190° and 220° when turning left and between 250° and 280° when turning right until the jet is either 5 mi. away from the airport or has gained an altitude of 5,000 ft. MSL.

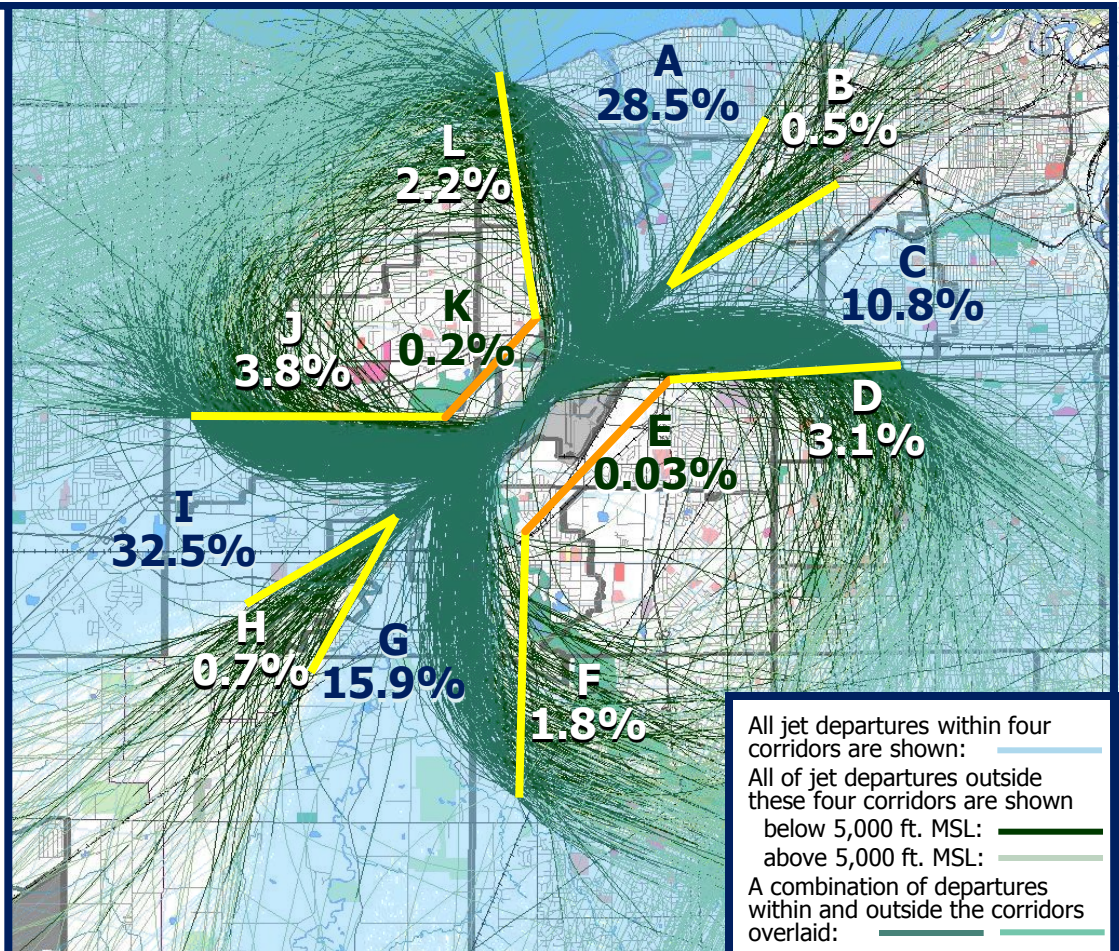
87.7% within corridors

- A. 28.5%:** north corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- C. 10.8%:** east corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- G. 15.9%:** south corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- I. 32.5%:** west corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL

12.3% outside corridors

- B. 0.5%:** flights crossing inner boundaries below 5,000 ft. MSL and then exiting between the north and east corridors
- D. 3.1%:** flights crossing the south boundary below 5,000 ft. MSL
- E. 0.03%:** flights turning south before entering the corridor
- F. 1.8%:** flights crossing the east boundary below 5,000 ft. MSL
- H. 0.7%:** flights crossing inner boundaries below 5,000 ft. MSL and then exiting between the west and south corridors
- J. 3.8%:** flights crossing the north boundary below 5,000 ft. MSL
- K. 0.2%:** flights turning north before entering the corridor
- L. 2.2%:** flights crossing the west boundary below 5,000 ft. MSL

(Percentages do not include Rwy 10/28 departures)



All jet departures within four corridors are shown: ———

All of jet departures outside these four corridors are shown below 5,000 ft. MSL: ———

above 5,000 ft. MSL: ———

A combination of departures within and outside the corridors overlaid: ———

Departure Headings – Night-time

Jet Departures, 11:00 p.m. to 6:00 a.m.

A voluntary measure of the Noise Compatibility Program calls for jets departing between 11:00 p.m. and 6:00 a.m. from Runways 6L and 6R to take headings of roughly 095° to 100° until reaching an altitude of 5,000 ft. MSL.

Another voluntary measure of the Noise Compatibility Program calls for jets departing between 11:00 p.m. and 6:00 a.m. from Runways 24L and 24R to take headings between 200° and 220° until reaching an altitude of 5,000 ft. MSL.

57.2% within corridors

A. 29.4%: 095 corridor, including flights crossing the 095 corridor boundaries above 5,000 ft. MSL

F. 27.8%: 200 corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL

42.8% outside corridors

B. 5.2%: flights crossing the south boundary below 5,000 ft. MSL

C. 0.0%: flights turning south before entering the 095 corridor

D. 0.5%: flights departing south without entering the 200 corridor

E. 6.2%: flights crossing the east boundary below 5,000 ft. MSL

G. 3.6%: flights crossing the west boundary below 5,000 ft. MSL

H. 9.3%: flights departing southwest without entering the corridor

I. 6.2%: flights departing west without entering the corridor

J. 10.8%: flights departing north, not east with the 095 corridor

K. 1.0%: flights crossing the north boundary below 5,000 ft. MSL
(There were two Rwy 10 and no Rwy 28 jet departures between 11:00 p.m. and 6:00 a.m. during the 3rd Qtr. of 2014.)

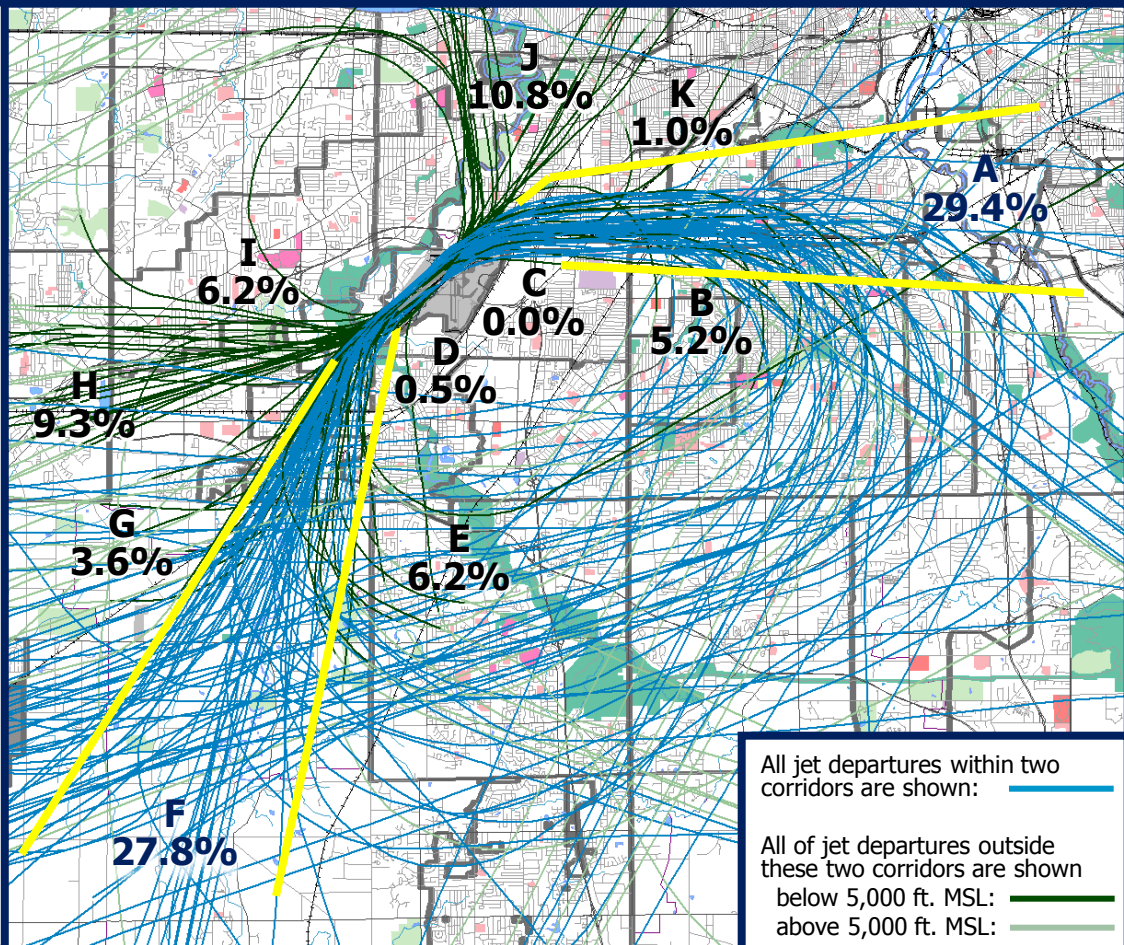
The percentage of departures on each runway from 11:00 p.m. to 6:00 a.m. during the 3rd Qtr. of 2014 were as follows:

Rwy	10	28	24L	24R	6L	6R
For jets:	1.0%	0.0%	6.7%	46.9%	42.8%	2.6%
For all aircraft:	1.8%	0.4%	6.7%	45.3%	43.6%	2.2%

5.7% of Jet Departures from Rwy 6L/6R were on the preferred Rwy, 6R.

(During the 3rd Quarter, Rwy 6R was closed on all but 8 days,

83.3% of departures from Rwy 6L/6R were on 6R while 6R was open.)



All jet departures within two corridors are shown: ———

All of jet departures outside these two corridors are shown
below 5,000 ft. MSL: ———
above 5,000 ft. MSL: ———

Arrival Headings – Night-time

Arrivals, 10:00 p.m. to 6:59 a.m.

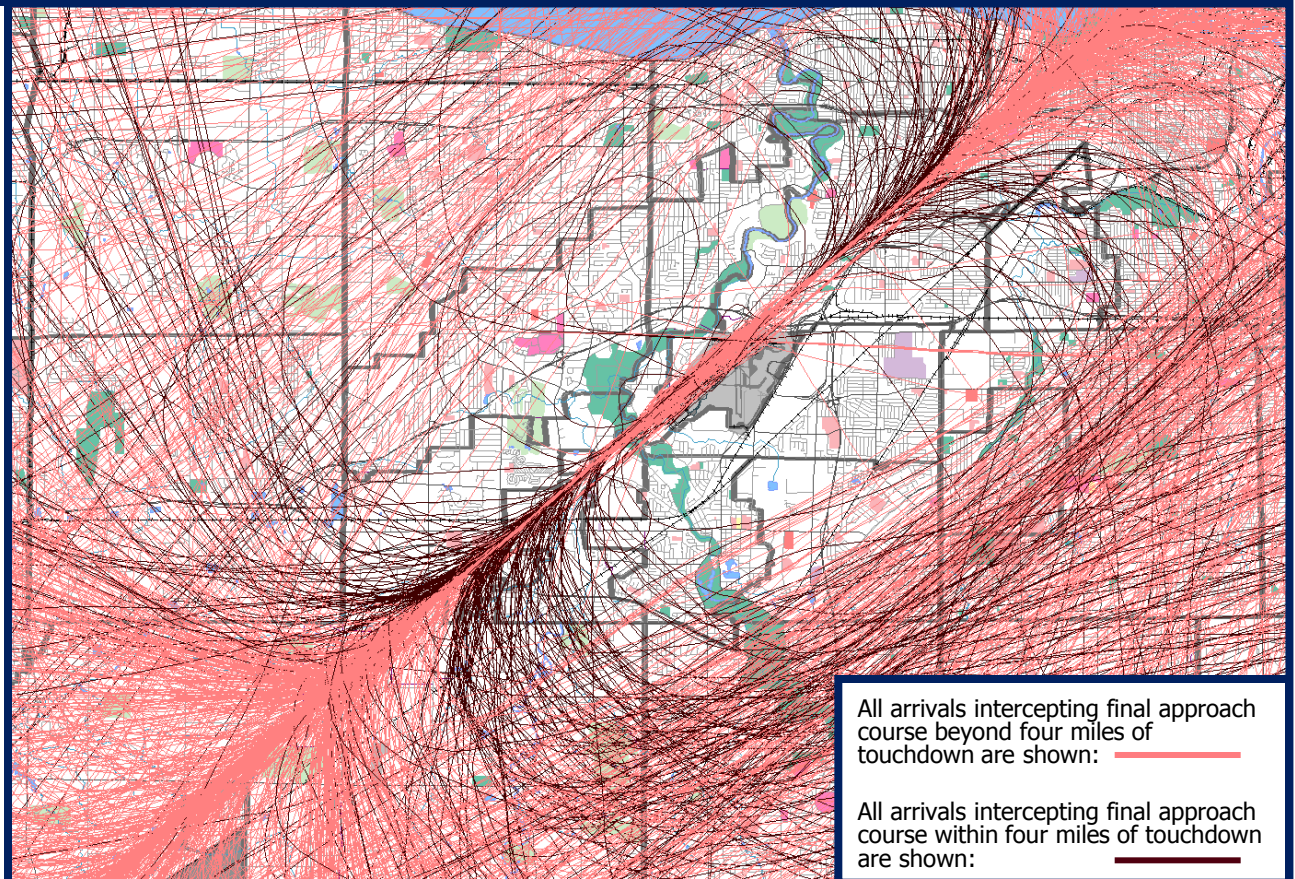
A voluntary measure of the Noise Compatibility Program calls for all aircraft arriving between 10:00 p.m. and 6:59 a.m., wind and weather permitting, to intercept final approach course no closer than four miles before touchdown.


86.9% beyond four miles and
13.1% within four miles


There is no comparable NCP measure regarding day-time arrivals.

Runway use by all arriving aircraft from 10:00 p.m. to 6:59 a.m. during the 3rd Qtr., 2014 was as follows:

Rwy	Percentage of Arrivals	
	Jets	All Aircraft
10	0.1%	0.2%
28	0.2%	0.3%
24L	1.7%	1.7%
24R	42.3%	42.7%
6L	54.5%	53.8%
6R	1.2%	1.2%



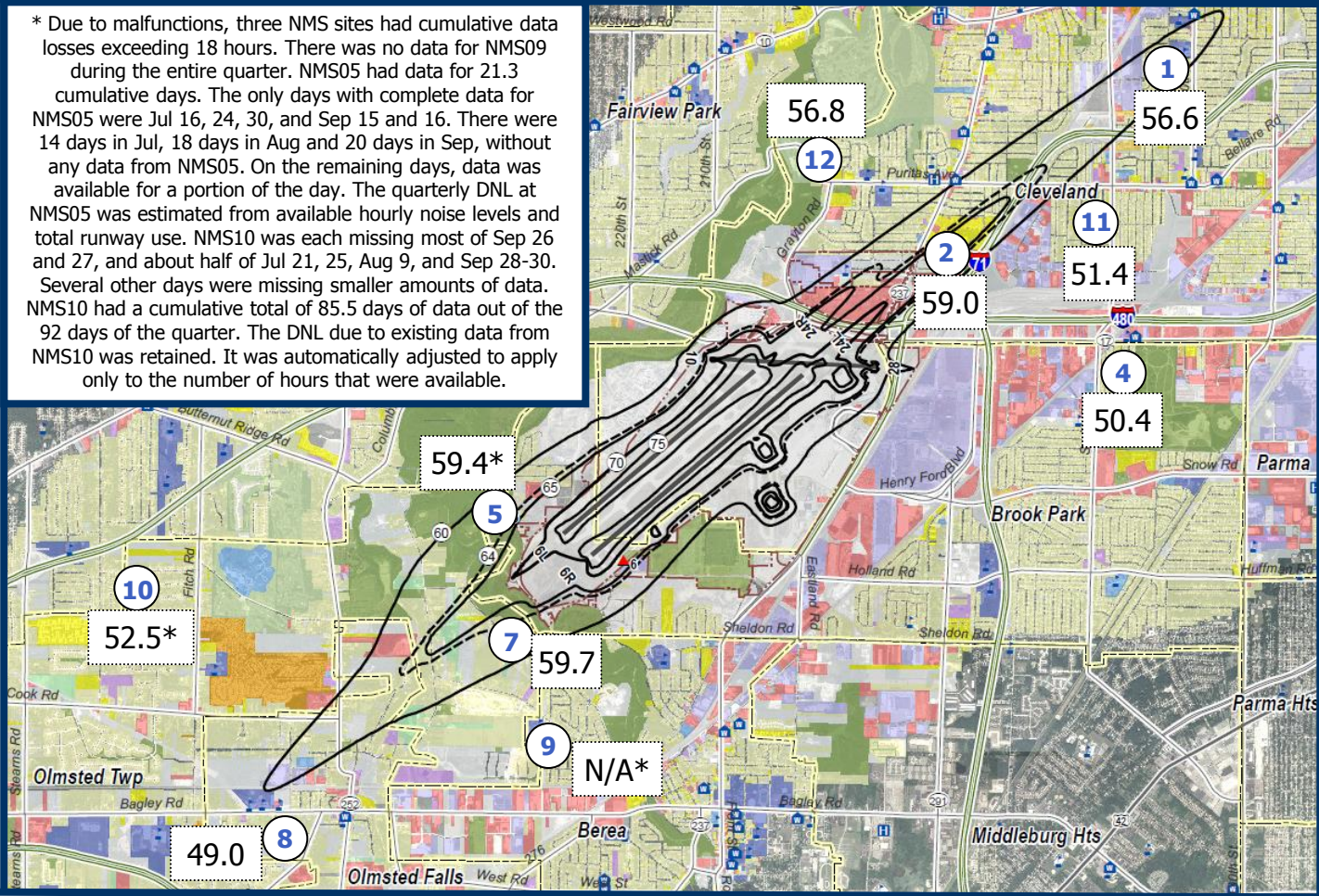
All arrivals intercepting final approach course beyond four miles of touchdown are shown: 

All arrivals intercepting final approach course within four miles of touchdown are shown: 

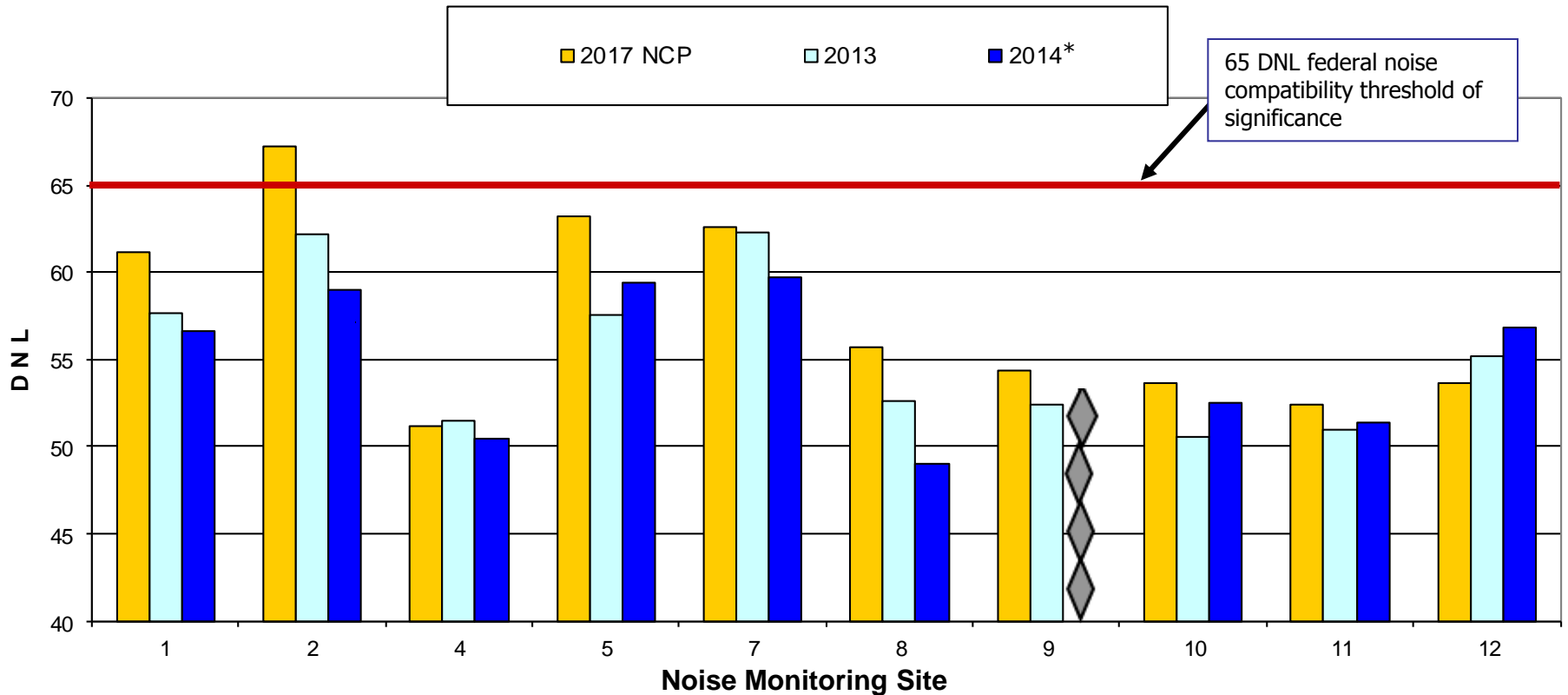
Aircraft Noise – DNL by Noise Monitoring Site



* Due to malfunctions, three NMS sites had cumulative data losses exceeding 18 hours. There was no data for NMS09 during the entire quarter. NMS05 had data for 21.3 cumulative days. The only days with complete data for NMS05 were Jul 16, 24, 30, and Sep 15 and 16. There were 14 days in Jul, 18 days in Aug and 20 days in Sep, without any data from NMS05. On the remaining days, data was available for a portion of the day. The quarterly DNL at NMS05 was estimated from available hourly noise levels and total runway use. NMS10 was each missing most of Sep 26 and 27, and about half of Jul 21, 25, Aug 9, and Sep 28-30. Several other days were missing smaller amounts of data. NMS10 had a cumulative total of 85.5 days of data out of the 92 days of the quarter. The DNL due to existing data from NMS10 was retained. It was automatically adjusted to apply only to the number of hours that were available.

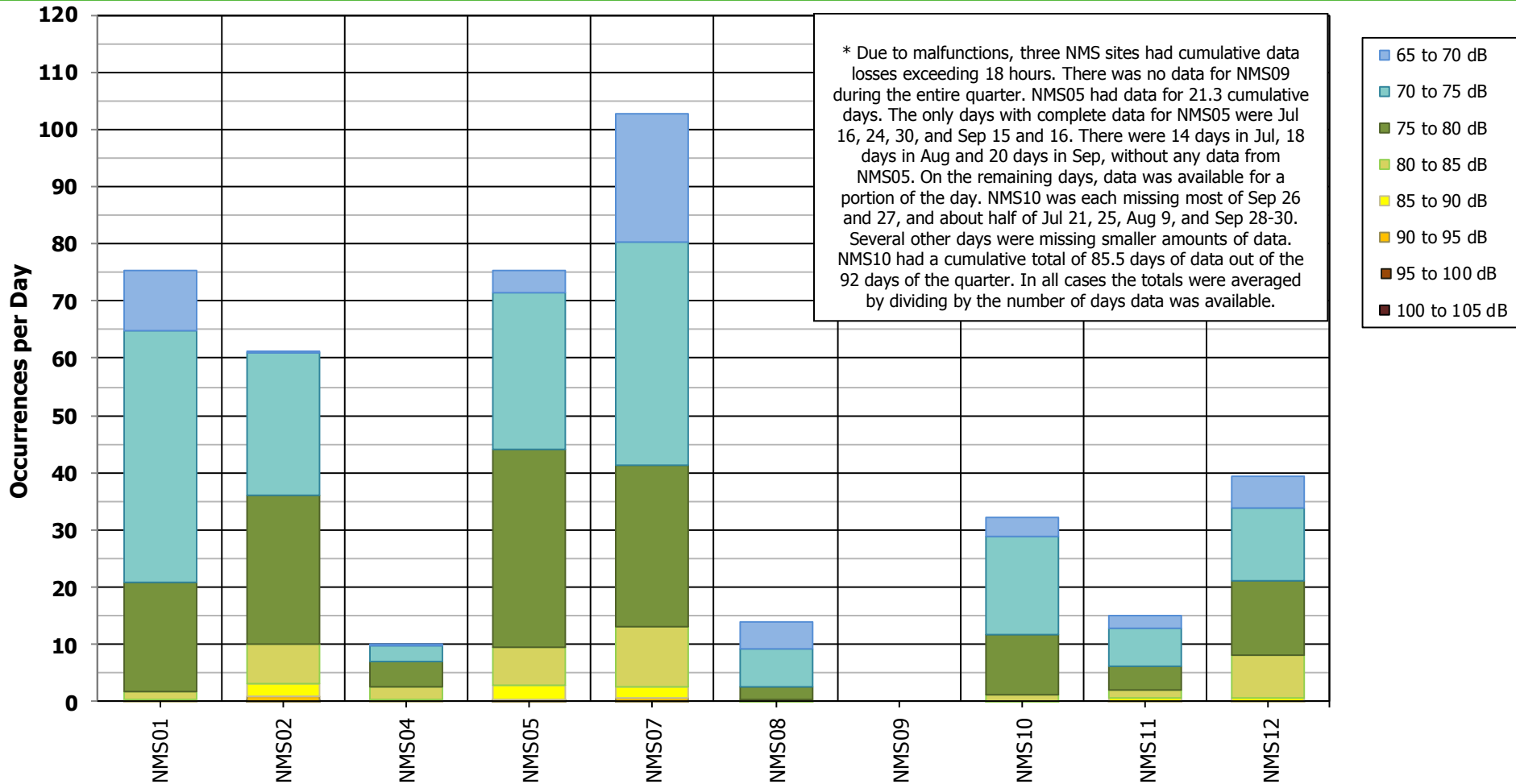


DNL: 3rd Qtr, 2014 vs. 3rd Qtr, 2013



** Due to malfunctions, three NMS sites had cumulative data losses exceeding 18 hours. There was no data for NMS09 during the entire quarter. NMS05 had data for 21.3 cumulative days. The only days with complete data for NMS05 were Jul 16, 24, 30, and Sep 15 and 16. There were 14 days in Jul, 18 days in Aug and 20 days in Sep, without any data from NMS05. On the remaining days, data was available for a portion of the day. The quarterly DNL at NMS05 was estimated from available hourly noise levels and total runway use. NMS10 was each missing most of Sep 26 and 27, and about half of Jul 21, 25, Aug 9, and Sep 28-30. Several other days were missing smaller amounts of data. NMS10 had a cumulative total of 85.5 days of data out of the 92 days of the quarter. The DNL due to existing data from NMS10 was retained. It was automatically adjusted to apply only to the number of hours that were available.

Average Daily Occurrences of Aircraft Noise, Grouped by Maximum Decibel Level



Top 3 Lmaxs at each NMS, (1 of 2)

NMS	Lmax (dB)	Aircraft	Operation	Time and date	Sound Exposure Level (dB)¹	Duration (sec)
NMS01	91.0	B757-200	Arrival on Rwy 24R	8/15/14 5:51 AM	98.5	34.5
NMS01	87.8	MD-88	Departure off Rwy 6L	7/24/14 7:21 AM	95.2	25.5
NMS01	87.2	Gulfstream II Business Jet	Departure off Rwy 6L	8/3/14 4:17 PM	94.9	28.5
NMS02	98.0	B757-200	Arrival on Rwy 24R	8/15/14 5:52 AM	101.1	27.5
NMS02	96.8	MD-88	Departure off Rwy 6L	7/22/14 7:30 AM	101.7	23.5
NMS02	95.6	B727-200	Departure off Rwy 6L	9/17/14 3:04 AM	102.9	37.5
NMS04	91.0	MD-88	Departure off Rwy 6L	7/10/14 5:08 PM	96.0	29.5
NMS04	89.0	MD-88	Departure off Rwy 6L	8/10/14 4:57 PM	92.9	21.0
NMS04	87.8	MD-88	Arrival on Rwy 28	9/1/14 12:05 PM	93.2	13.5
NMS05 ²	96.8	MD-88	Departure off Rwy 24R	9/15/14 11:26 AM	104.1	56.5
NMS05 ²	92.6	Beechjet 400 Business Jet	Departure off Rwy 24R	9/15/14 11:48 AM	96.4	20.0
NMS05 ²	91.4	B727-200	Departure off Rwy 24R	7/31/14 5:13 AM	98.4	27.0
NMS07	94.7	B727-200	Departure off Rwy 24R	7/30/14 9:57 PM	101.1	40.5
NMS07	94.6	MD-88	Departure off Rwy 24L	9/23/14 2:54 PM	101.0	29.0
NMS07	94.2	MD-88	Departure off Rwy 24L	7/6/14 1:12 PM	100.3	34.5

¹ Sound Exposure Level is a measure that takes into account all noise over the entire duration of an event.

² Due to equipment malfunctions, data for NMS05 is available for a cumulative total of 21.3 out of the 92 days of the quarter.

Top 3 Lmaxs at each NMS, (2 of 2)

NMS	Lmax (dB)	Aircraft	Operation	Time and date	Sound Exposure Level (dB)¹	Duration (sec)
NMS08	89.6	B727-200	Departure off Rwy 24R	7/30/14 11:57 PM	97.6	36.5
NMS08	87.3	MD-88	Departure off Rwy 24R	9/11/14 12:56 PM	93.6	28.5
NMS08 ²	86.3	MD-88	Departure off Rwy 24R	8/11/14 4:52 PM	92.3	25.0
NMS10 ³	86.8	B727-200	Departure off Rwy 24R	7/29/14 7:06 PM	96.9	53.5
NMS10 ³	86.1	MD-88	Departure off Rwy 24R	7/13/14 7:32 AM	94.5	35.5
NMS10 ³	85.7	Airbus A319	Departure off Rwy 24R	9/30/14 11:02 AM	91.7	21.0
NMS11	90.9	MD-88	Departure off Rwy 6L	8/11/14 7:25 AM	97.9	36.5
NMS11	90.8	MD-88	Departure off Rwy 6L	8/2/14 7:38 AM	97.7	29.5
NMS11	90.7	MD-88	Departure off Rwy 6L	8/7/14 4:55 PM	97.2	39.5
NMS12	90.9	MD-82	Departure off Rwy 6L	8/28/14 6:19 PM	98.8	30.5
NMS12	90.4	MD-11	Departure off Rwy 6L	7/25/14 10:31 PM	96.7	29.5
NMS12	90.0	MD-11	Departure off Rwy 6L	8/13/14 10:35 PM	96.9	27.5

¹ Sound Exposure Level is a measure that takes into account all noise over the entire duration of an event.

² Due to equipment malfunctions, no data is available for NMS09 within the 3rd Quarter of 2014.

³ Due to equipment malfunctions, data for NMS10 is available for a cumulative total of 85.5 out of the 92 days of the quarter.

Noise Complaints







City	Jul	Aug	Sep	3 rd Q '14 Calls	%	3 rd Q '13 Calls	%	3 rd Q '14 Callers	%	3 rd Q '13 Callers	%
Berea	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Brook Park	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Cleveland	5	19	5	29	39.2%	37	47.4%	8	26.6%	12	48.0%
Fairview Park	8	4	3	15	20.3%	6	7.7%	12	40.0%	4	16.0%
Lakewood	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Middleburg Hts.	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
North Olmsted	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Olmsted Falls	0	2	0	2	2.7%	2	2.6%	2	6.7%	2	8.0%
Olmsted Twp.	0	0	0	0	0.0%	27	34.6%	0	0.0%	3	12.0%
Parma	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Parma Heights	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Rocky River	3	11	9	23	31.1%	5	6.4%	4	13.3%	3	12.0%
Westlake	0	0	2	2	2.7%	0	0.0%	2	6.7%	0	0.0%
Other	2	1	0	3	4.0%	1	1.3%	2	6.7%	1	4.0%
Totals	18	37	19	74	100.0%	78	100.0%	30	100.0%	25	100.0%

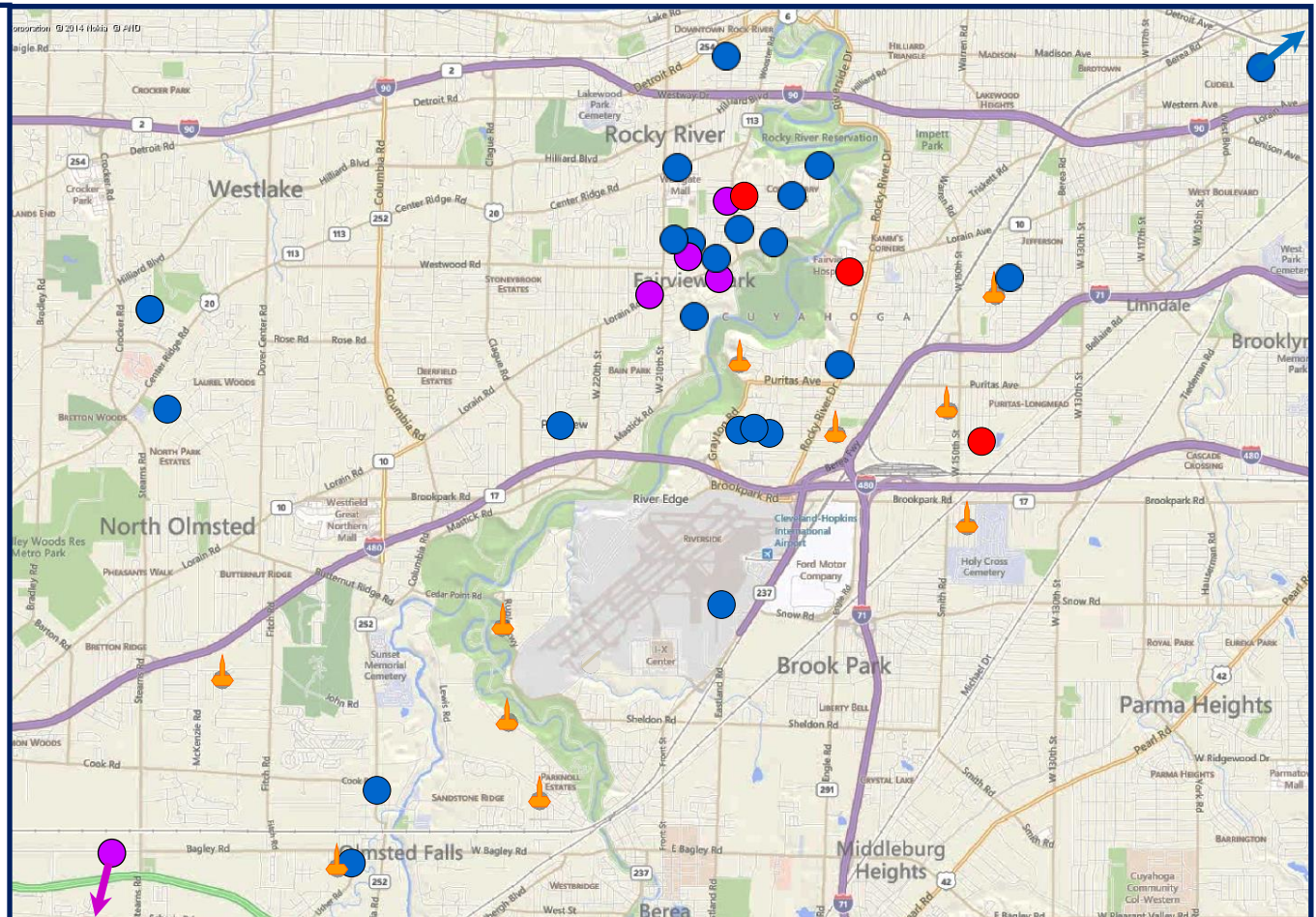
Noise Hotline – (216) 898-5220

Complaint Map

LEGEND

Complaints per household

-  1 complaint
-  2 to 5 complaints
-  6 or more complaints
-  Noise Monitoring Station



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