



Noise Compatibility

2nd Quarter, 2013

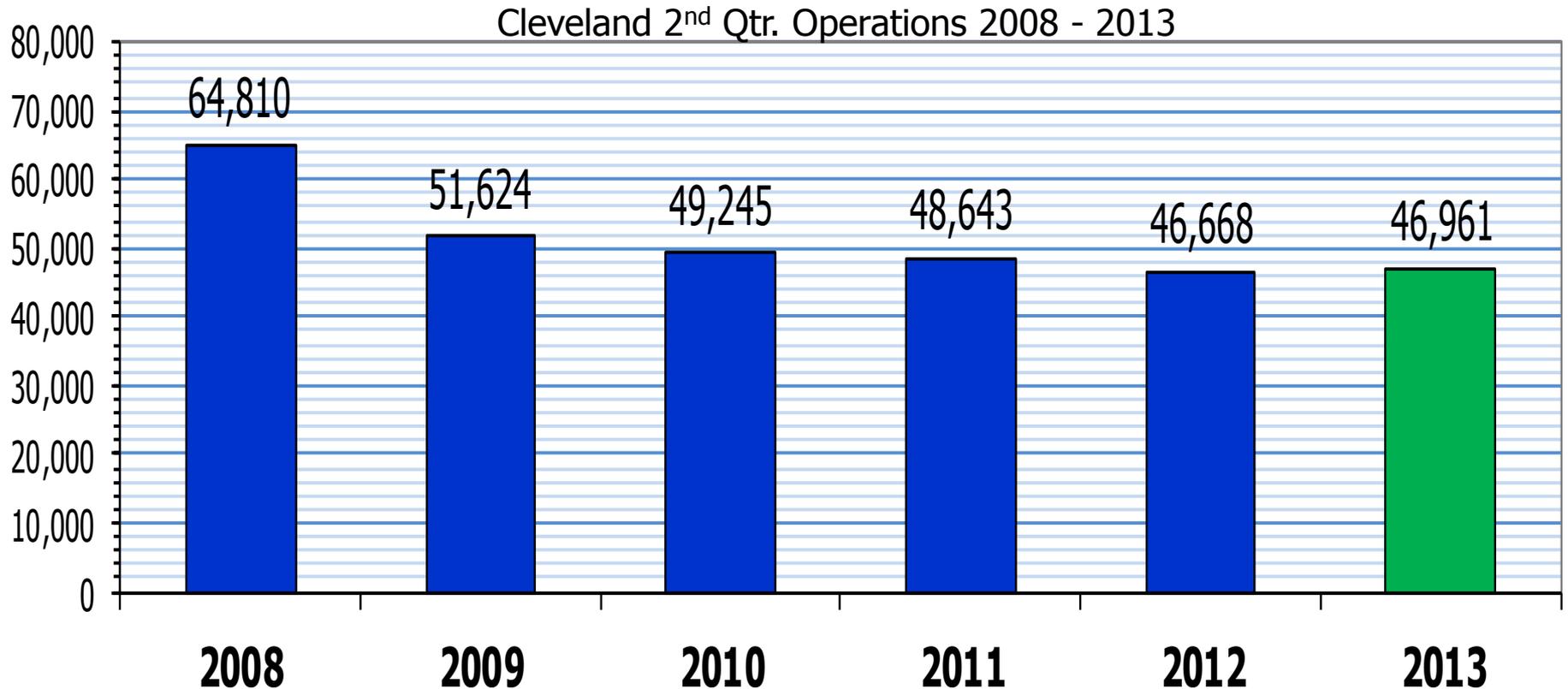
Sep 20, 2013

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



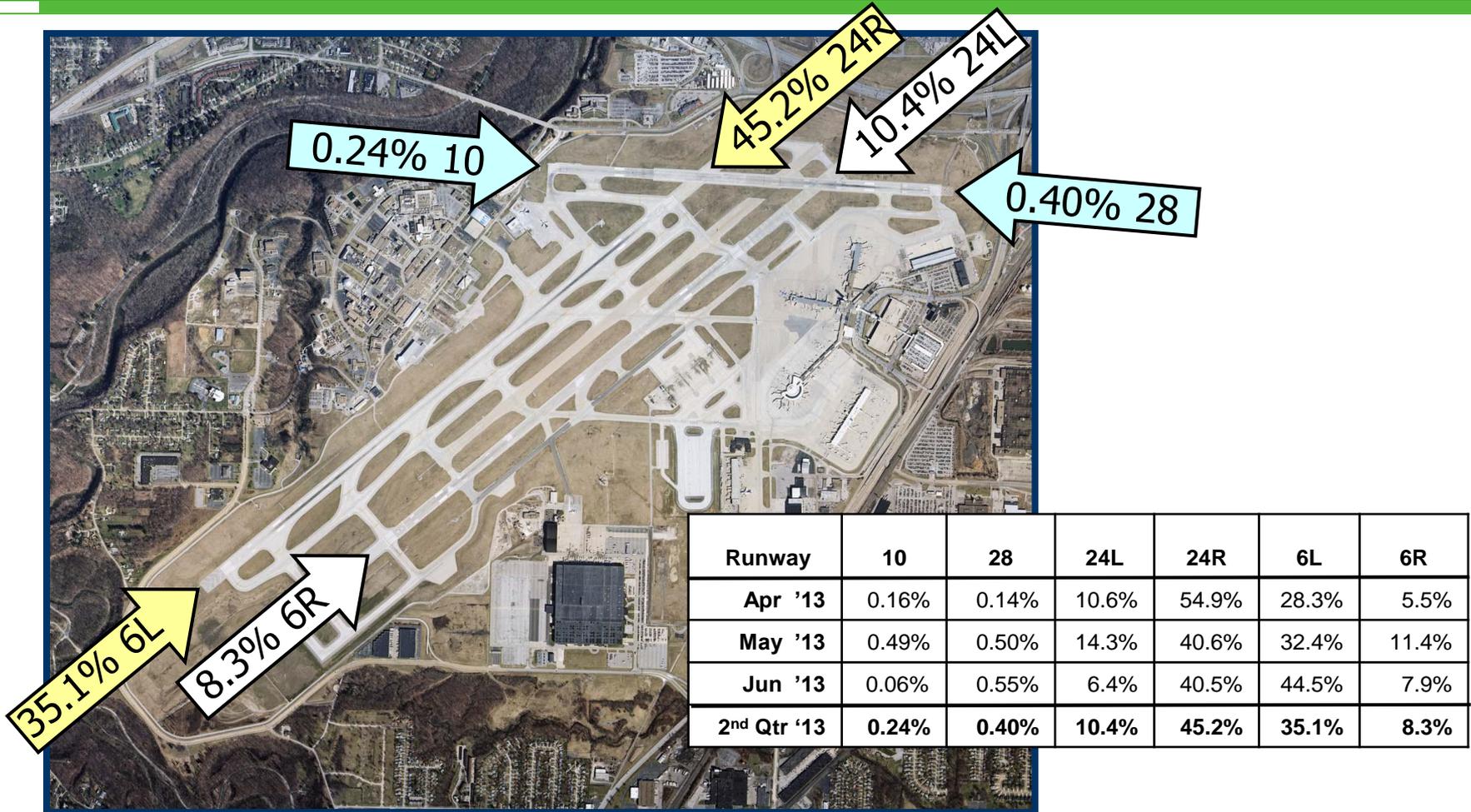
There were 46,961 landings and takeoffs in the 2nd Qtr. 2013; this is 0.63% above the 2nd Qtr. 2012.

Landings & Takeoffs

	2 nd Qtr, 2013		2 nd Qtr, 2012	
Commercial				
-Stage 2 with hush kit	182	0.39%	179	0.38%
-Heavy (incl. all B757s)	624	1.33%	1,056	2.26%
-MD80 series	920	1.96%	892	1.91%
-Other Stage 3	12,672	26.98%	11,410	24.45%
-Regional Jet	21,747	46.31%	21,626	46.34%
-Turboprop	7,697	16.39%	8,653	18.54%
Air Taxi	840	1.79%	652	1.40%
General Aviation	2,192	4.67%	2,141	4.59%
Military	87	0.18%	59	0.13%
Total	46,961	100.00%	46,668	100.00%

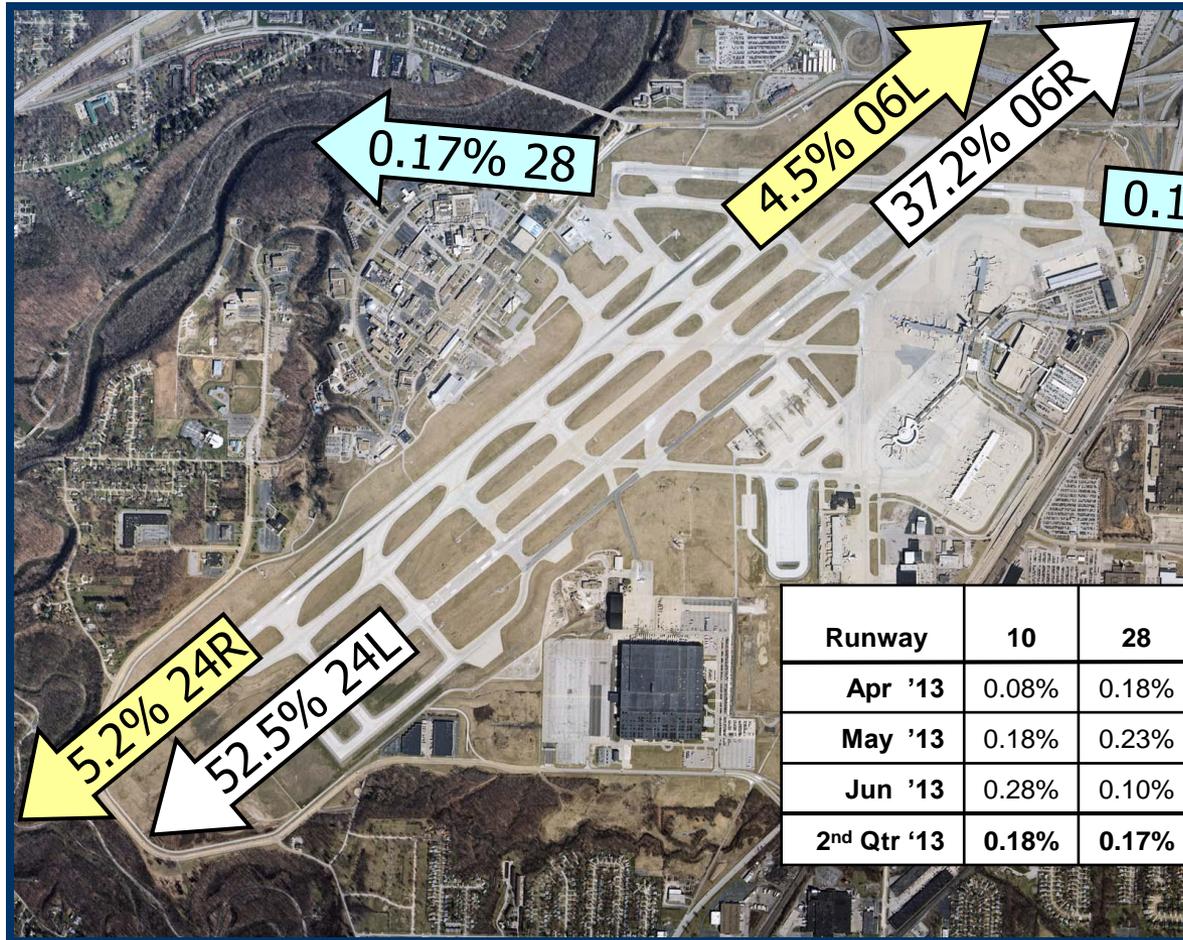
All aircraft above are Stage 3 certified with the exception of some Military and 1.4% of General Aviation (GA) aircraft, including helicopters. Stage 2 GA accordingly is 0.07% of the overall fleet. A hush kit reduces noise enough to meet Stage 3 levels, but well short of the noise level typical of aircraft originally manufactured as Stage 3.

Runway Use: 2nd Qtr, 2013 Arrivals



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

Runway Use: 2nd Qtr, 2013 Departures



Runway	10	28	24L	24R	6L	6R
Apr '13	0.08%	0.18%	60.9%	6.2%	3.7%	28.8%
May '13	0.18%	0.23%	50.0%	7.3%	5.0%	36.9%
Jun '13	0.28%	0.10%	46.8%	2.1%	4.9%	45.7%
2nd Qtr '13	0.18%	0.17%	52.5%	5.2%	4.5%	37.2%

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.

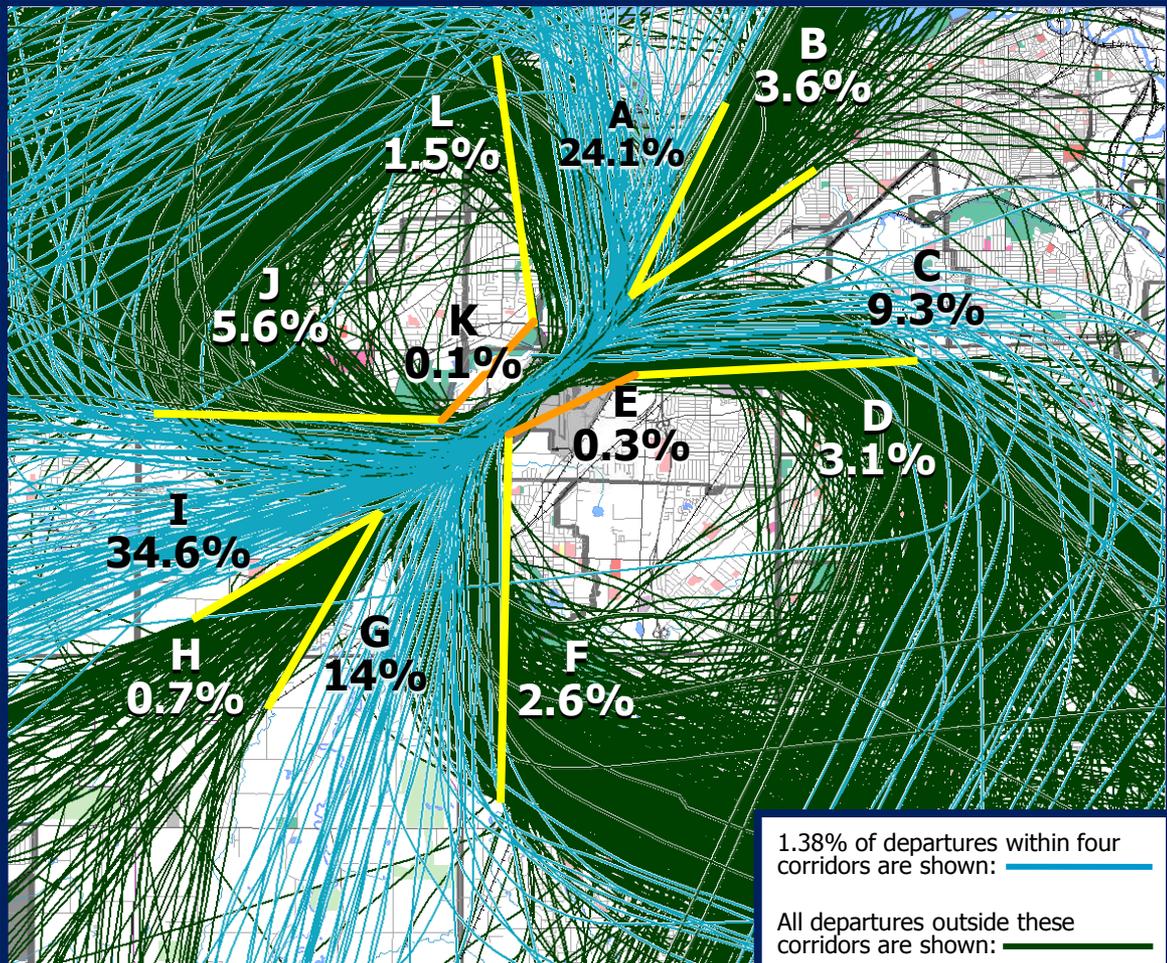
82.4% within corridors

- A. 24.1%:** north corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- C. 9.3%:** east corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- G. 14.4%:** south corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- I. 34.6%:** west corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL

17.6% outside corridors

- B. 3.6%:** flights crossing inner boundaries below 5,000 ft. MSL and then exiting between the north and south corridors
- D. 3.1%:** flights crossing the south boundary below 5,000 ft. MSL
- E. 0.3%:** flights turning south before entering the corridor
- F. 2.6%:** 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. 5.6%:** flights crossing the north boundary below 5,000 ft. MSL
- K. 0.1%:** flights turning north before entering the corridor
- L. 1.5%:** flights crossing the west boundary below 5,000 ft. MSL

(Percentages do not include Rwy 10/28 departures)



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.

55.8% within corridors

- A. 30.2%:** 095 corridor, including flights crossing the 095 corridor boundaries above 5,000 ft. MSL
- F. 25.6%:** 200 corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL

44.2% outside corridors

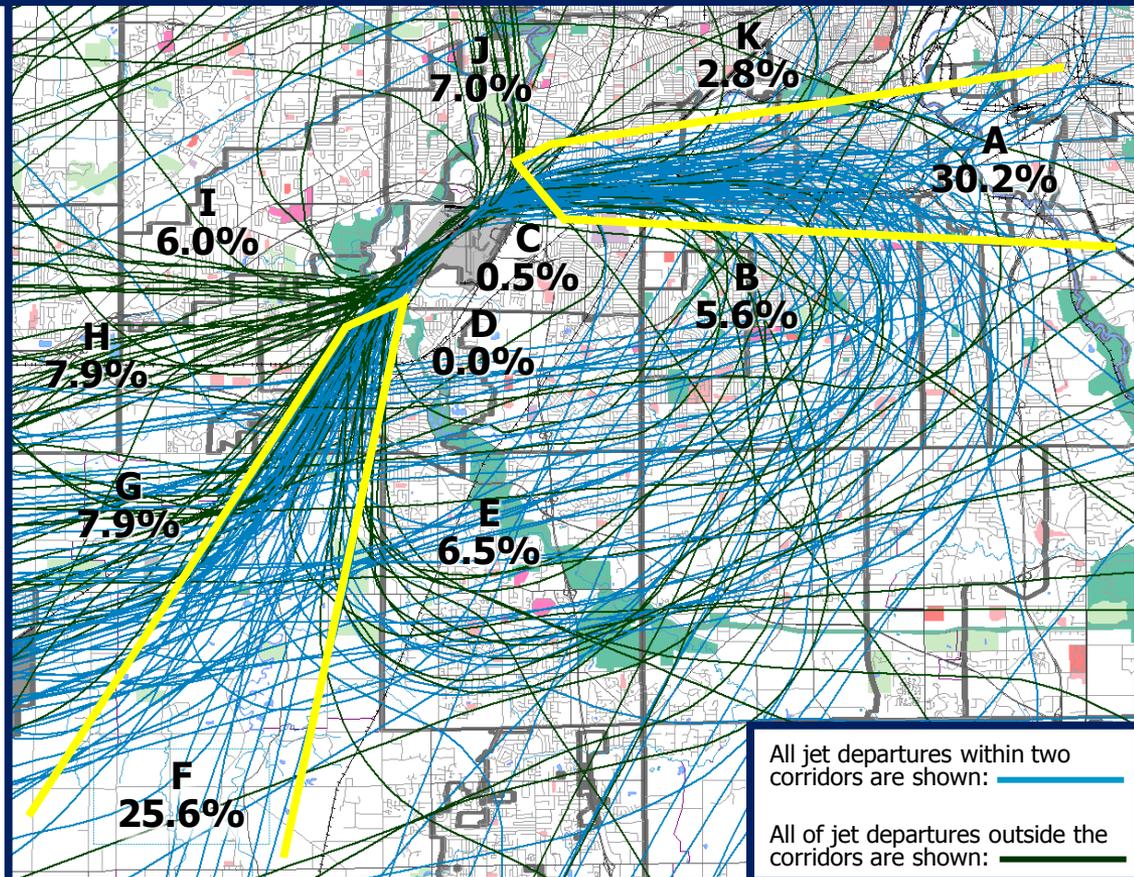
- B. 5.6%:** flights crossing the south boundary below 5,000 ft. MSL
- C. 0.5%:** flights turning south before entering the 095 corridor
- D. 0.0%:** flights departing south without entering the 200 corridor
- E. 6.5%:** flights crossing the east boundary below 5,000 ft. MSL
- G. 7.9%:** flights crossing the west boundary below 5,000 ft. MSL
- H. 7.9%:** flights departing southwest without entering the corridor
- I. 6.0%:** flights departing west without entering the corridor
- J. 7.0%:** flights departing north, not east with the 095 corridor
- K. 2.8%:** flights crossing the north boundary below 5,000 ft. MSL

(There were no Rwy 10 and one Rwy 28 jet departures between 11:00 p.m. and 6:00 a.m. during the 2nd Qtr. of 2013.)

The percentage of departures on each runway from 11:00 p.m. to 6:00 a.m. during the 2nd Qtr. of 2013 were as follows:

Rwy	10	28	24L	24R	6L	6R
For jets:	0.0%	0.5%	49.1%	5.5%	4.1%	40.8%
For all aircraft:	0.4%	1.1%	46.8%	6.3%	4.8%	40.6%

90.8% of Jet Departures from Rwy 6L/6R are on the preferred Rwy, 6R.



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

All of jet departures outside the corridors are shown: ———

Arrival Headings – Night-time

Arrivals, 10:00 p.m. to 6:59 a.m., 2nd Qtr., 2013

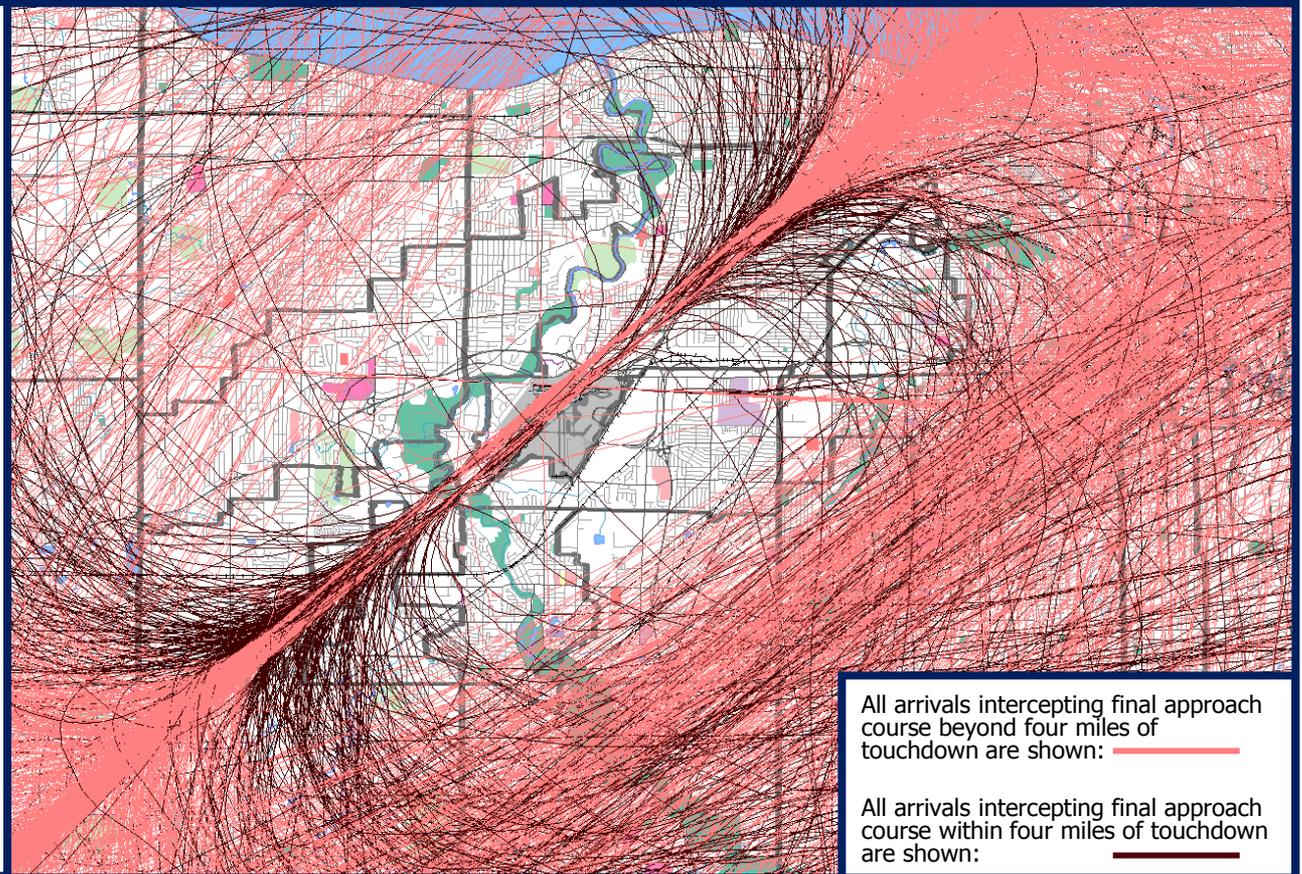
A voluntary measure of the Noise Compatibility Program calls for all aircraft arriving between 10:00 p.m. and 6:59 a.m., wind and weather permitting, to intercept final approach course no closer than four miles before touchdown.

84.8% beyond four miles and
15.2% 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 2nd Qtr., 2013 was as follows:

Rwy	Percentage of Arrivals	
	Jets	All Aircraft
10	0.1%	0.2%
28	0.4%	0.6%
24L	13.5%	13.8%
24R	34.8%	34.8%
6L	34.7%	34.1%
6R	16.4%	16.4%



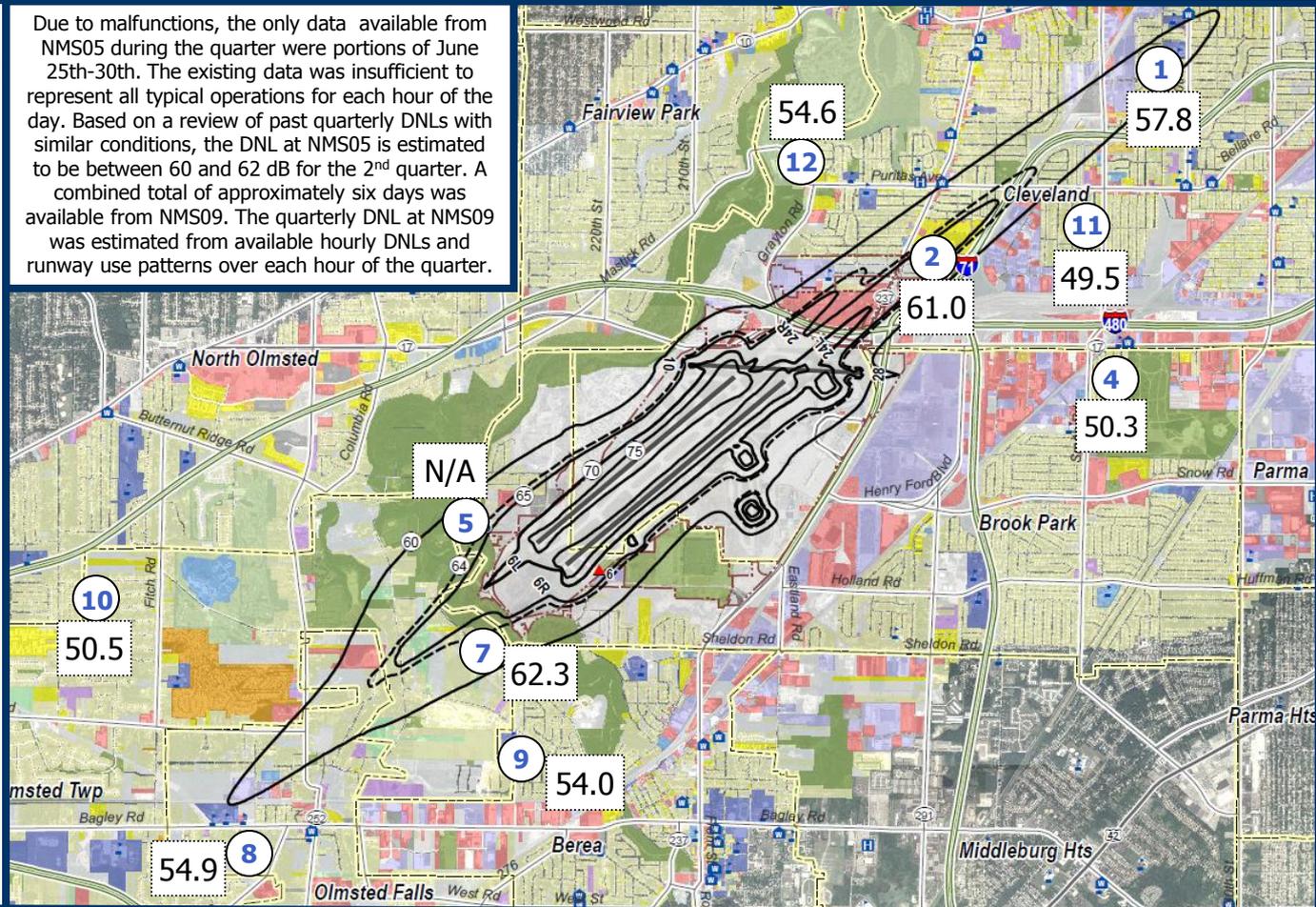
All arrivals intercepting final approach course beyond four miles of touchdown are shown: —————

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

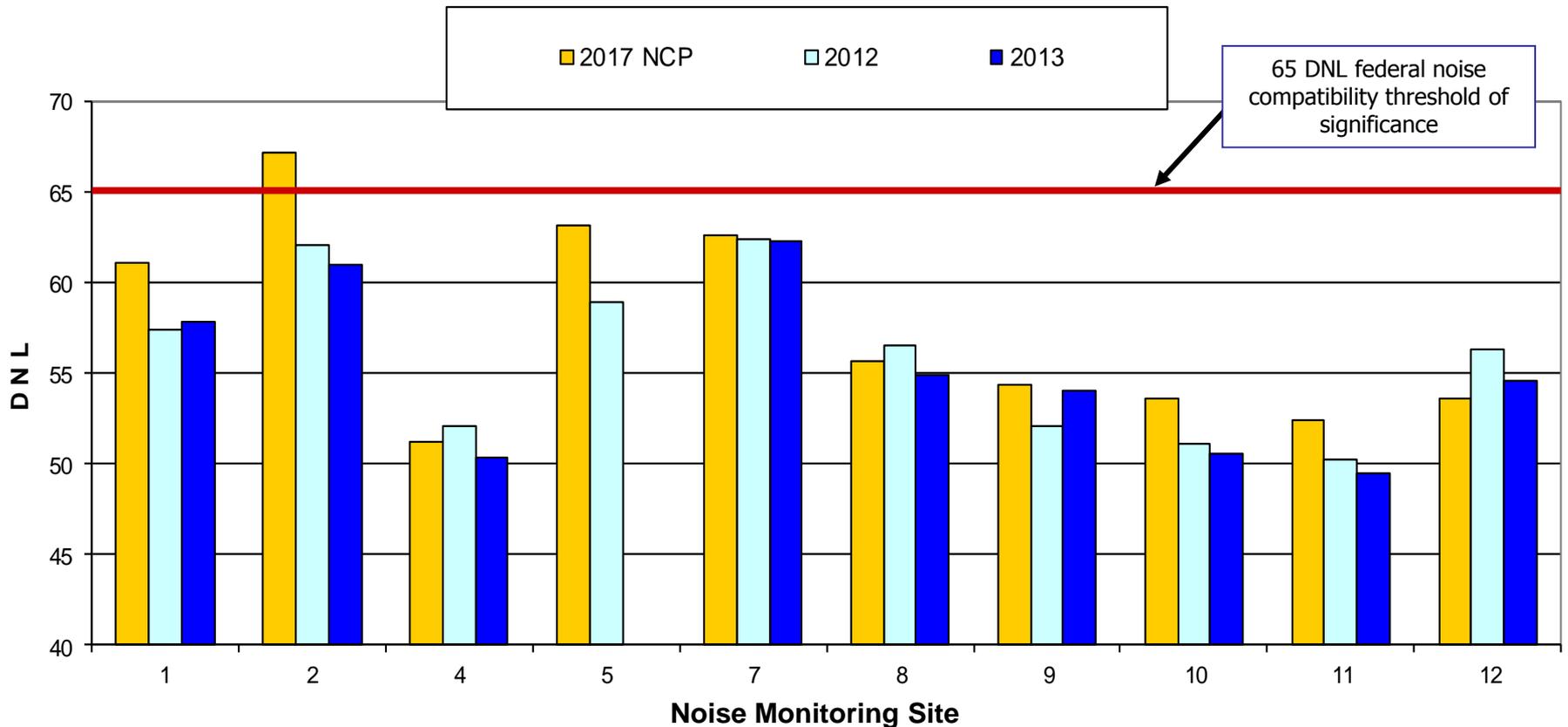
Aircraft Noise – DNL by Noise Monitoring Site



Due to malfunctions, the only data available from NMS05 during the quarter were portions of June 25th-30th. The existing data was insufficient to represent all typical operations for each hour of the day. Based on a review of past quarterly DNLs with similar conditions, the DNL at NMS05 is estimated to be between 60 and 62 dB for the 2nd quarter. A combined total of approximately six days was available from NMS09. The quarterly DNL at NMS09 was estimated from available hourly DNLs and runway use patterns over each hour of the quarter.

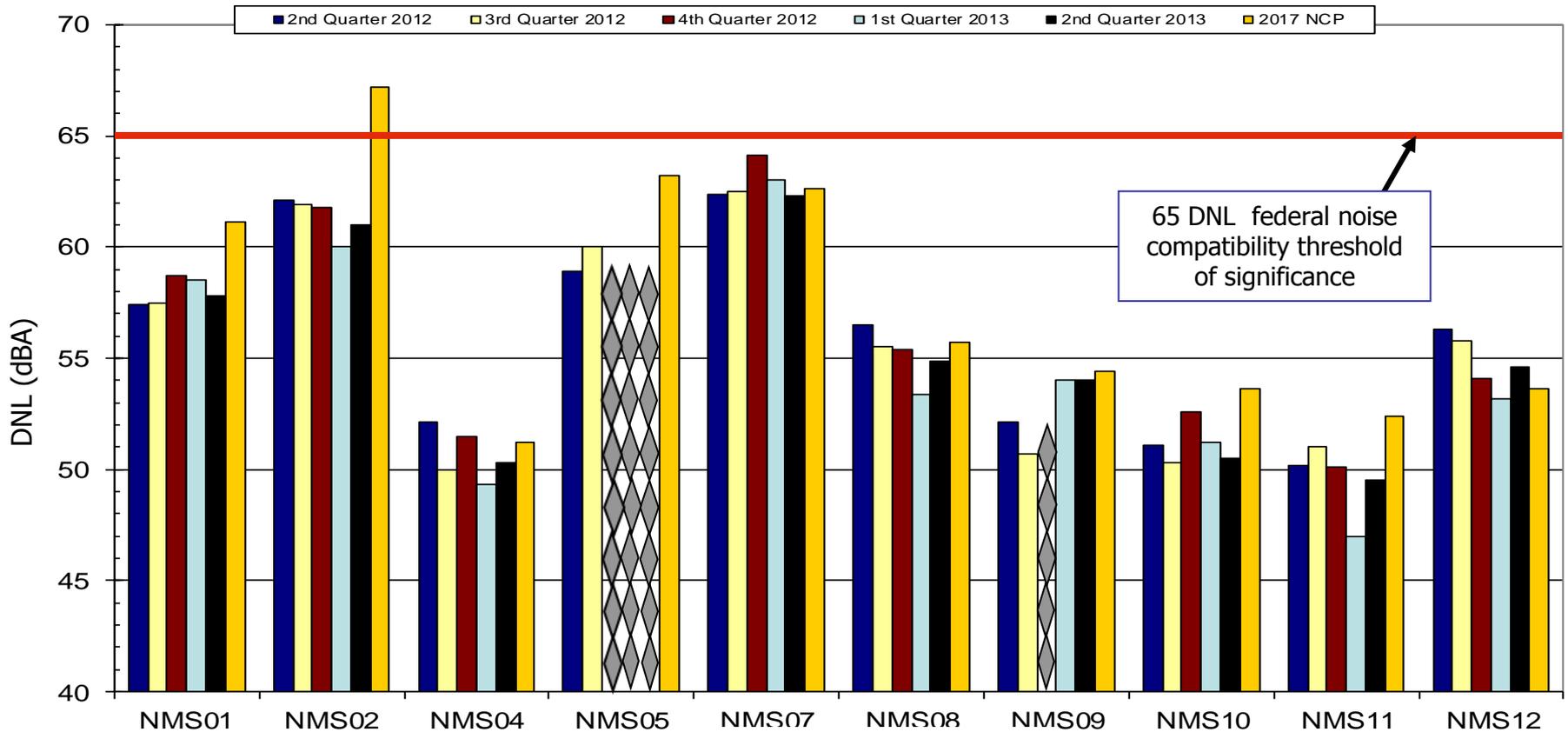


DNL: 2nd Qtr, 2013 vs. 2nd Qtr, 2012



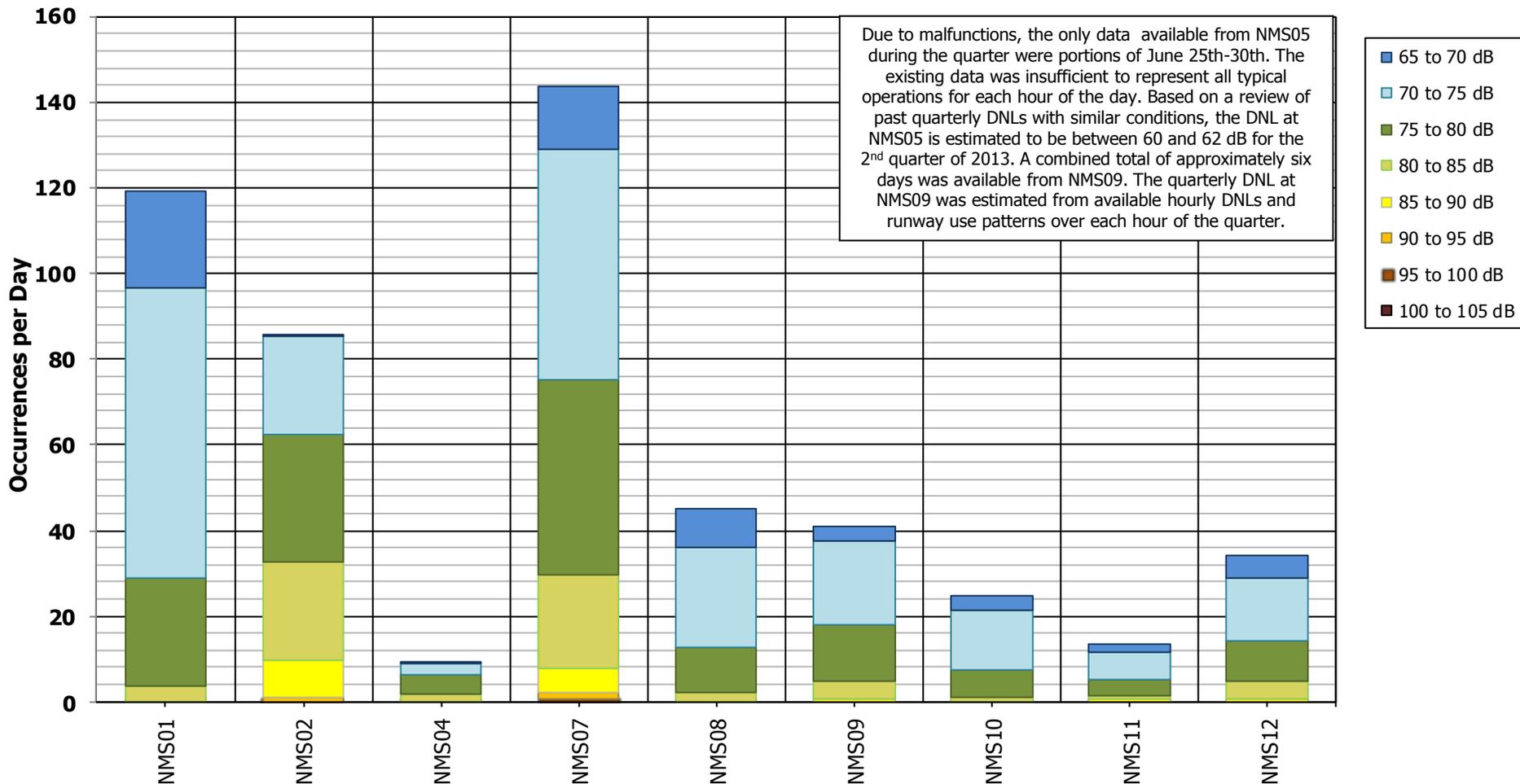
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Five Qtr. DNL Comparison



Due to malfunctions, the only data available from NMS05 during the quarter were portions of June 25th-30th. The existing data was insufficient to represent all typical operations for each hour of the day. Based on a review of past quarterly DNLs with similar conditions, the DNL at NMS05 is estimated to be between 60 and 62 dB for the 2nd quarter of 2013. A combined total of approximately six days was available from NMS09. The quarterly DNL at NMS09 was estimated from available hourly DNLs and runway use patterns over each hour of the quarter.

Maximum Level per Noise Event, Occurrences Averaged by Day



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	91.3	DC9-50	Arrival on Rwy 24R	4/12/2013 5:57 PM	98.1	28.5
NMS01	91.2	Embraer 145 Regional Jet	Arrival on Rwy 24R	6/23/13 2:53 PM	94.2	9.0
NMS01	89.0	Glasair III piston prop	Arrival on Rwy 24L	4/3/2013 9:40	91.8	15.0
NMS02	96.6	MD-82	Departure off Rwy 6R	4/10/2013 14:09	101.8	23.0
NMS02	96.3	DC9-50	Departure off Rwy 6L	4/17/2013 19:14	102.5	34.5
NMS02	96.2	DC9-50	Departure off Rwy 6L	5/2/2013 19:06	104.1	35.5
NMS04	90.6	MD-88	Departure off Rwy 6L	5/25/2013 9:38	97.7	28.5
NMS04	89.7	MD-88	Departure off Rwy 6L	6/18/2013 20:35	95.9	29.5
NMS04	89.0	MD-88	Departure off Rwy 6R	6/19/2013 19:19	95.5	35.5
NMS05 ²	85.7	MD-88	Departure off Rwy 24L	6/26/13 8:41 AM	93.0	28.0
NMS05 ²	84.7	B737-300	Departure off Rwy 24L	6/25/13 10:41 PM	93.3	44.0
NMS05 ²	84.4	DC9-50	Departure off Rwy 24L	6/29/13 11:28 AM	93.1	33.0
NMS07	99.6	DC9-50	Departure off Rwy 24L	4/14/2013 13:02	107.3	35.5
NMS07	99.4	DC9-50	Departure off Rwy 24L	4/19/2013 19:19	107.2	30.0
NMS07	99.4	DC9-50	Departure off Rwy 24L	5/10/2013 19:06	106.8	30.0

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, the only data available from NMS05 during the quarter were portions of June 25th-30th. It is probable that some aircraft exceeded 90 dB without being represented here.

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	91.1	MD-83	Departure off Rwy 24L	5/16/13 6:34 PM	95.7	25.5
NMS08	88.9	MD-82	Departure off Rwy 24L	4/13/13 7:09 AM	96.1	40.5
NMS08	88.9	MD-88	Departure off Rwy 24L	6/17/13 12:54 PM	96.1	28.0
NMS09 ³	92.1	DC9-50	Departure off Rwy 24L	6/15/13 11:33 AM	99.2	29.5
NMS09 ³	90.3	MD-88	Departure off Rwy 24L	6/16/13 8:42 AM	96.7	32.0
NMS09 ³	89.4	DC9-50	Departure off Rwy 24L	6/16/13 11:23 AM	97.8	34.0
NMS10	90.1	WW II Era Aircraft	Departure off Rwy 24R	6/15/13 3:00 PM	97.2	29.0
NMS10	88.2	MD-83	Departure off Rwy 24L	4/27/13 7:09 AM	95.0	29.5
NMS10	86.9	MD-82	Departure off Rwy 24L	5/10/13 7:08 AM	93.5	30.5
NMS11	94.9	DC9-50	Departure off Rwy 6L	5/2/13 7:07 PM	101.5	39.5
NMS11	92.0	MD-82	Departure off Rwy 6R	4/10/13 2:09 PM	99.3	36.0
NMS11	90.6	MD-88	Departure off Rwy 6L	4/28/13 1:14 PM	97.7	38.0
NMS12	94.8	MD-82	Departure off Rwy 6R	5/24/13 3:01 PM	100.1	36.0
NMS12	92.6	MD-83	Departure off Rwy 6R	4/11/13 7:25 AM	98.4	30.0
NMS12	92.5	MD-83	Departure off Rwy 6R	4/28/13 7:08 AM	98.0	24.5

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

³ Due to malfunctions, a combined total of only approximately 6 days were available from NMS09. It is possible that some aircraft exceeded 93 dB at NMS09 without being represented here.

Noise Complaints



City	Apr	May	Jun	2 nd Q '13 Calls	%	2 nd Q '12 Calls	%	2 nd Q '13 Callers	%	2 nd Q '12 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%	1	2.9%	0	0.0%	1	6.3%
Cleveland	11	40	31	82	89.1%	23	65.7%	10	52.6%	5	31.2%
Fairview Park	1	0	5	6	6.5%	6	17.1%	5	26.3%	5	31.2%
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%	1	2.9%	0	0.0%	1	6.3%
Olmsted Falls	2	0	1	3	3.3%	2	5.7%	3	15.8%	2	12.5%
Olmsted Twp.	0	0	1	1	1.1%	0	0.0%	1	5.3%	0	0.0%
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	0	0	0	0	0.0%	1	2.9%	0	0.0%	1	6.3%
Westlake	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other	0	0	0	0	0.0%	1	2.9%	0	0.0%	1	6.3%
Totals	14	40	38	92	100.0%	35	100.0%	19	100.0%	16	100.0%

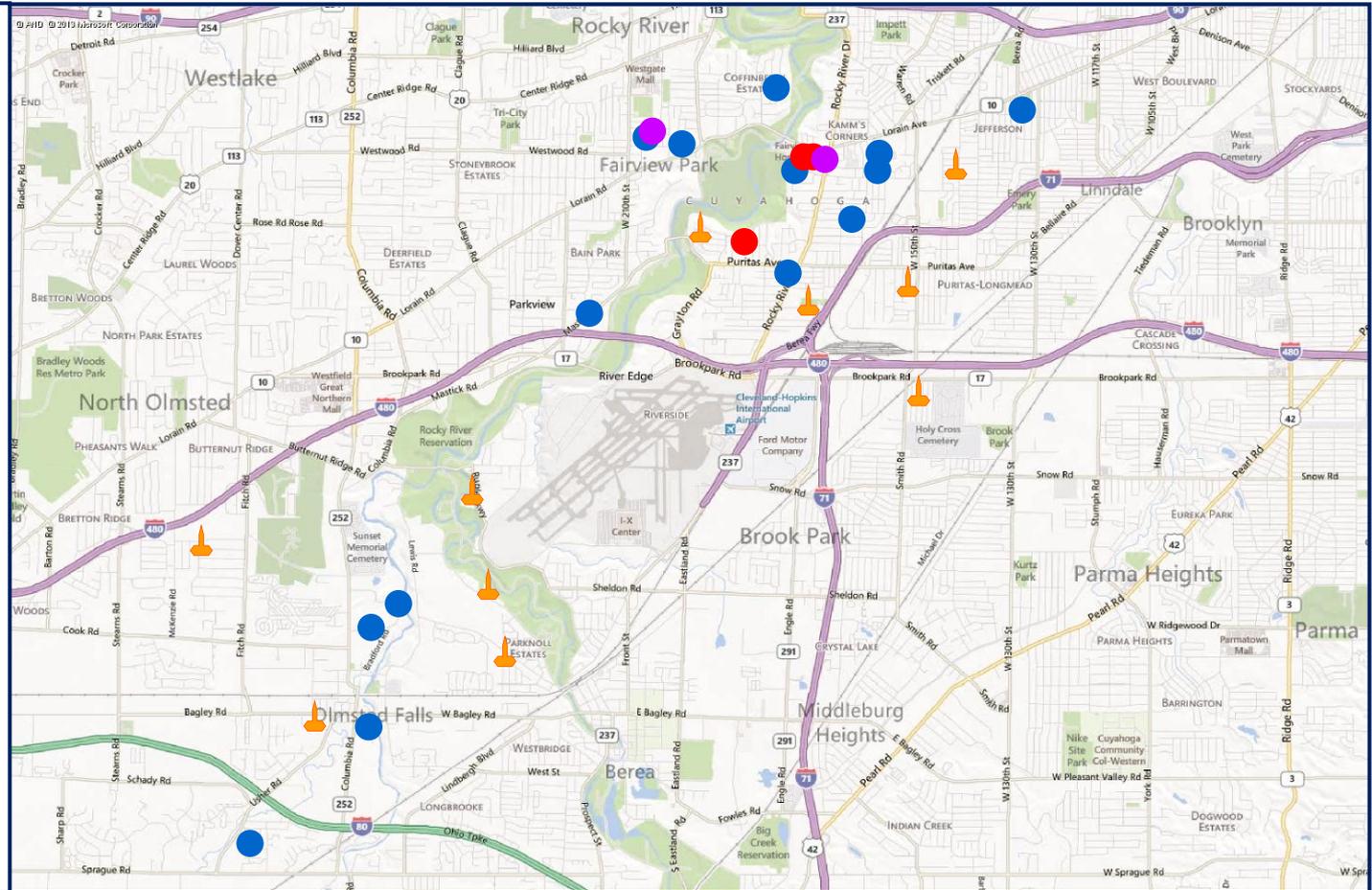
Noise Hotline – (216) 898-5220

Complaint Map

LEGEND

Complaints per household

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



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