



Noise Compatibility

Year End, 2012

April 5, 2013

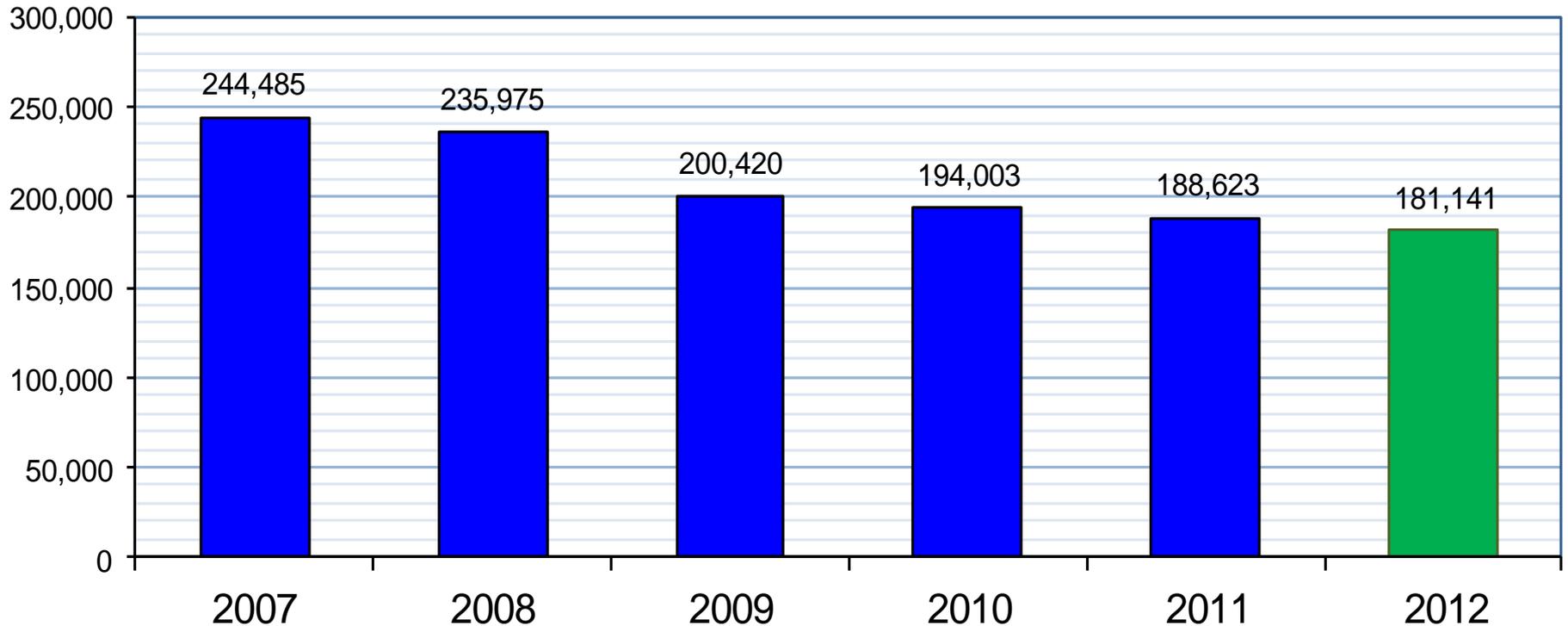
Noise Highlights of 2012



- Airport operations for Year 2012 were down 3.97%, compared to Year 2011.
- The FAA issued a Record of Approval (ROA) for the new Noise Compatibility Program (NCP) Update (FAR Part 150 Study) on **Nov 28, 2012**. The FAA approved twelve measures in full and six in part.
- Runway 10/28 temporarily closed in June, 2012 due to construction
- Runway 24L/6R closed from 10:00 p.m. to 6:00 a.m. from early July to late Aug due to construction
- Runway 6L/24R closed from 10:00 p.m. to 5:30 a.m. from late Aug to early Oct due to construction
- Noise Complaints for Year 2012 were down 36.1%, compared to Year 2011.

Aircraft Operations

Cleveland Total Operations 2007 - 2012



There were 181,141 landings and takeoffs in 2012; this is 3.97% below 2011 and 6.63% below 2010.

Source: FAA Control Tower Traffic Count Reports and STARS radar data

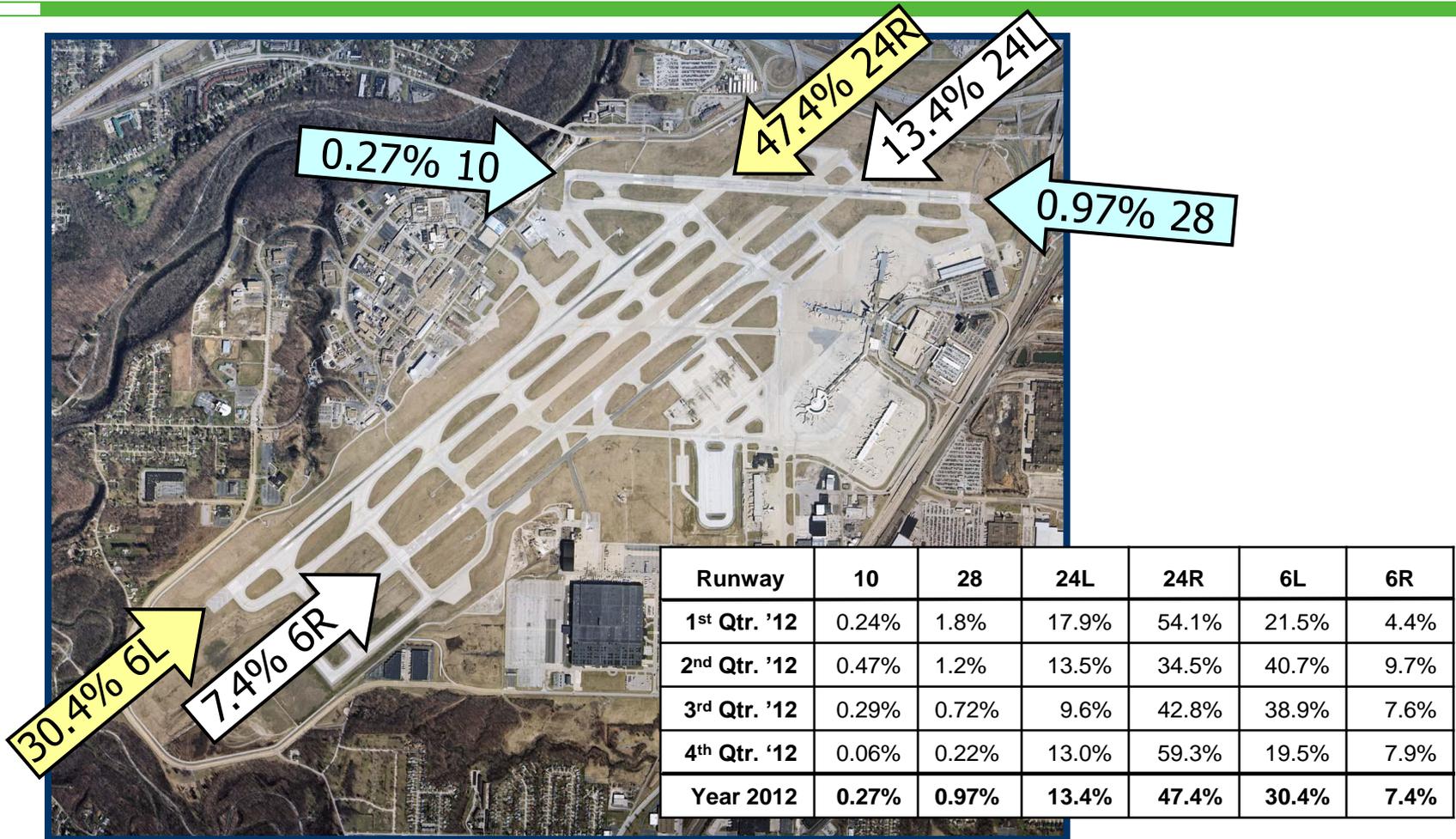
Fleet Mix: Year 2012 vs. Year 2011

Landings & Takeoffs

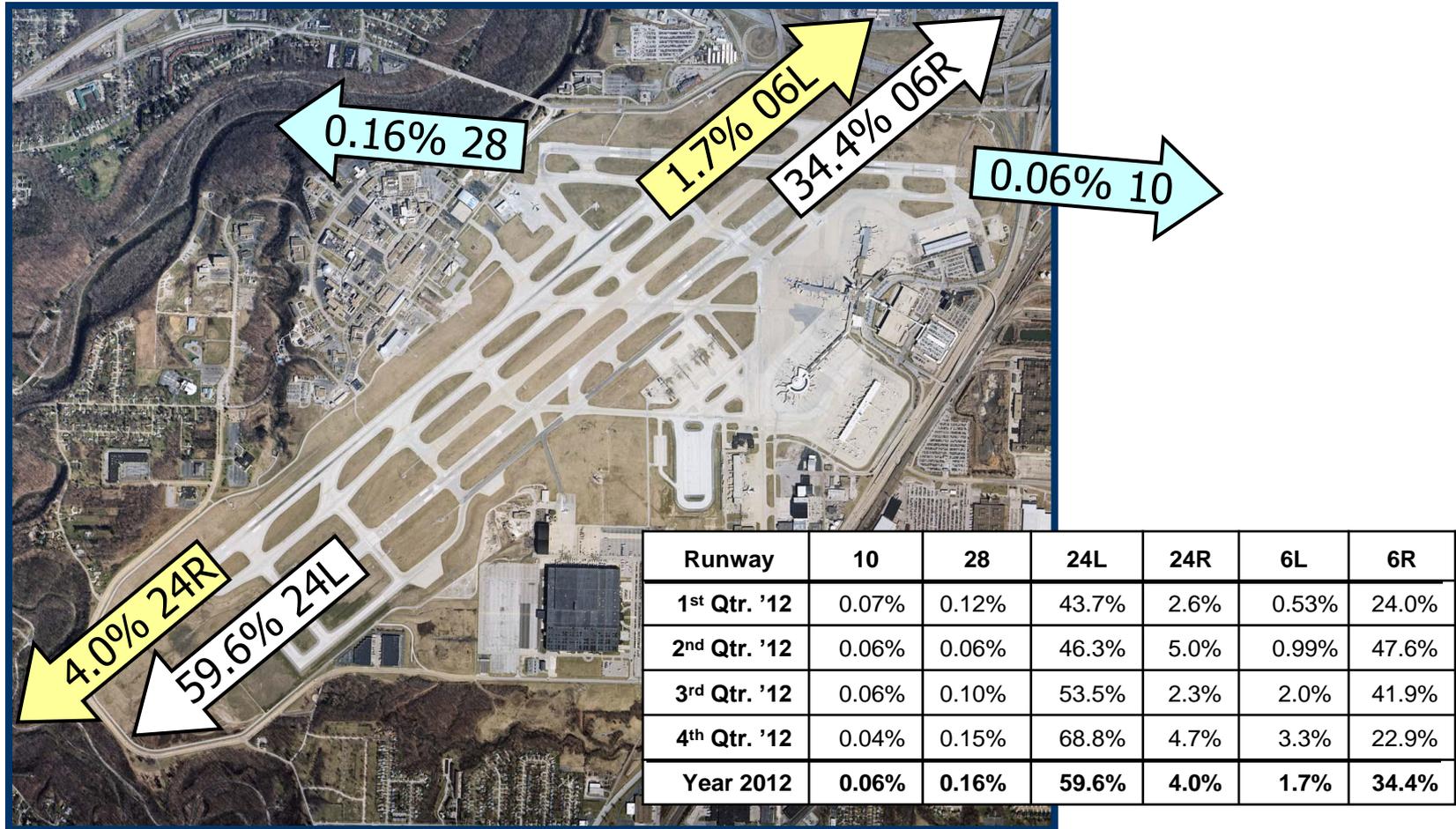
	2012 Activity		2011 Activity	
Commercial				
-Stage 2 with hush kit	945	0.52%	882	0.47%
-Heavy (incl. all B757s)	3,493	1.93%	3,798	2.01%
-MD80 series	3,161	1.75%	1,951	1.03%
-Other Stage 3	46,234	25.52%	45,894	24.33%
-Regional Jet	84,981	46.92%	89,566	45.89%
-Turboprop	31,736	17.52%	37,595	19.93%
Air Taxi	1,794	0.99%	3,023	1.60%
General Aviation	8,575	4.73%	8,649	4.59%
Military	221	0.12%	265	0.14%
Total	181,141	100.00%	188,623	100.00%

All aircraft above are Stage 3 certified with the exception of some Military aircraft and about 2% of General Aviation aircraft, counting helicopters. A hush kit reduces noise enough to meet Stage 3 levels, but well short of the noise level of typical aircraft originally manufactured as Stage 3.

Runway Use: Year 2012 Arrivals



Runway Use: Year 2012 Departures



4th Qtr Departure Headings – Day-time

Jet Departures, 6:00 a.m. to 11:00 p.m., 4th Qtr., 2012

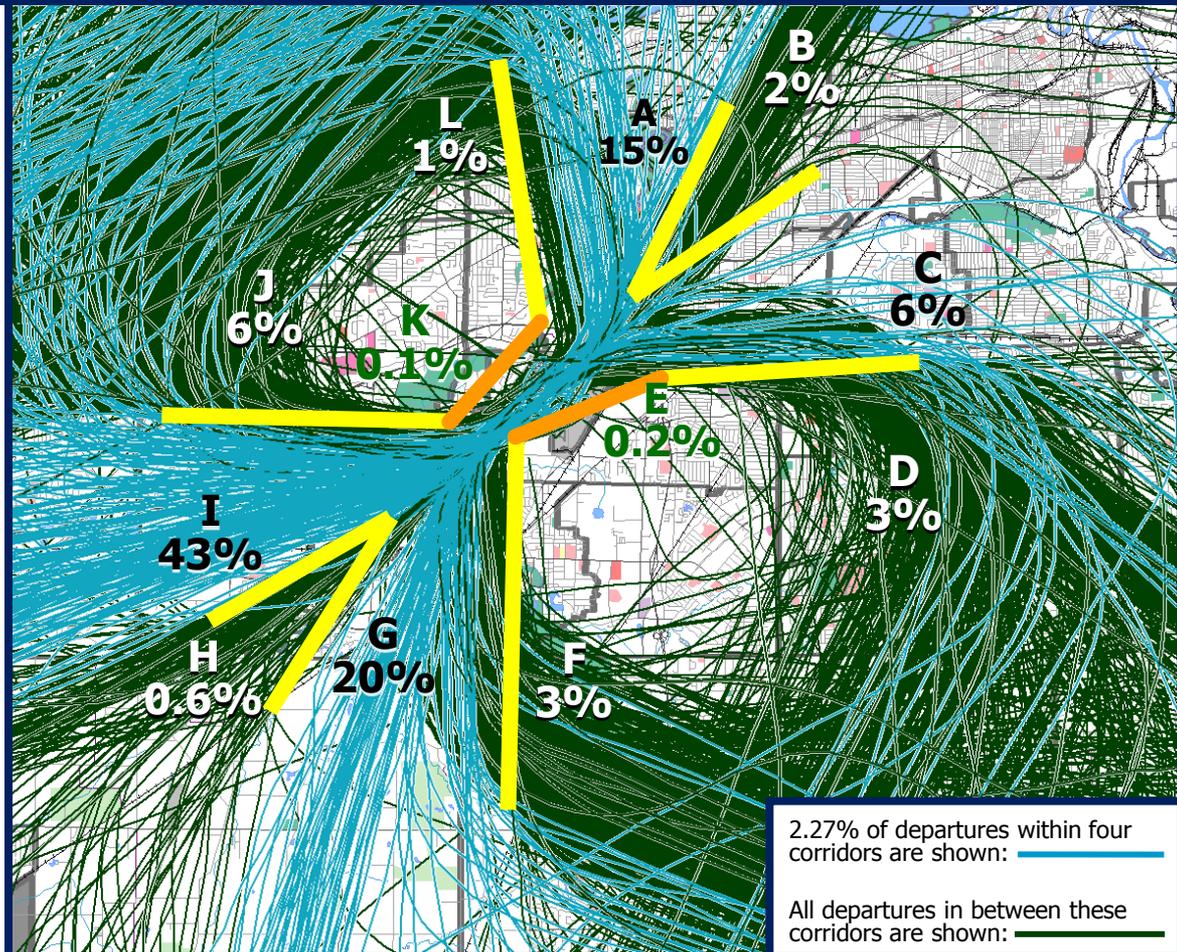
A voluntary measure of the Noise Compatibility Program calls for jets departing between 6:00 a.m. and 11:00 p.m. from Runways 6L and 6R to take headings between 360° and 35° when turning left and between 65° and 95° when turning right until the jet is either 5 mi. away from the airport or has gained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

83.5% within corridors and 16.6% between corridors

- A. 15%:** north corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- B. 2%:** flights crossing inner boundaries below 5,000 ft. MSL and then exiting between the north and south corridors
- C. 6%:** east corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- D. 3%:** flights crossing the south boundary below 5,000 ft. MSL
- E. 0.2%:** flights turning south before entering the corridor
- F. 3%:** flights crossing the east boundary below 5,000 ft. MSL
- G. 20%:** south corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- H. 0.6%:** flights crossing inner boundaries below 5,000 ft. MSL and then exiting between the west and south corridors
- I. 43%:** west corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- J. 6%:** flights crossing the north boundary below 5,000 ft. MSL
- K. 0.1%:** flights turning north before entering the corridor
- L. 1%:** flights crossing the west boundary below 5,000 ft. MSL

(Percentages do not include Rwy 10/28 departures)



4th Qtr Departure Headings – Night-time

Jet Departures, 11:00 p.m. to 6:00 a.m., 4th Qtr., 2012

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.

57.3% within corridors and 42.7% between corridors

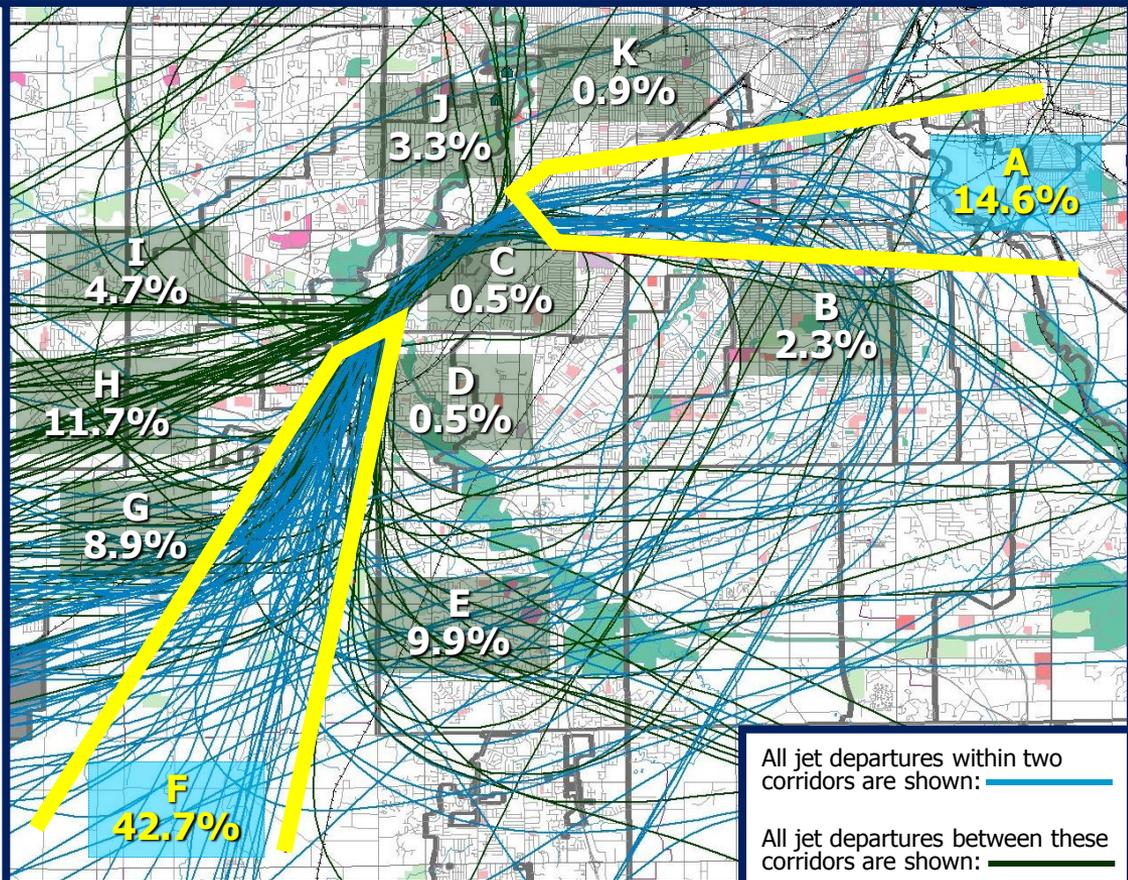
- A. 14.6%:** 095 corridor, including flights crossing the 095 corridor boundaries above 5,000 ft. MSL
- B. 2.3%:** flights crossing the south boundary below 5,000 ft. MSL
- C. 0.5%:** flights turning south before entering the 095 corridor
- D. 0.5%:** flights departing south without entering the 200 corridor
- E. 9.9%:** flights crossing the east boundary below 5,000 ft. MSL
- F. 42.7%:** 200 corridor, including flights crossing the corridor boundaries above 5,000 ft. MSL
- G. 8.9%:** flights crossing the west boundary below 5,000 ft. MSL
- H. 11.7%:** flights departing southwest without entering the corridor
- I. 4.7%:** flights departing west without entering the corridor
- J. 3.3%:** flights departing north without entering the corridor
- K. 0.9%:** 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 4th Qtr. of 2012)

The percentage of departures on each runway from 11:00 p.m. to 6:00 a.m. during the 4th Qtr. of 2012 were as follows:

Rwy	10	28	24L	24R	6L	6R
For jets:	0.9%	0.0%	63.1%	15.0%	1.9%	19.2%
For all aircraft:	0.8%	0.8%	63.6%	12.5%	1.9%	20.5%

91.1% of Jet Departures from Rwy 6L/6R are on the preferred Rwy, 6R.



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

All jet departures between these corridors are shown: ———

4th Qtr Arrival Headings – Night-time

Arrivals, 10:00 p.m. to 6:59 a.m., 4th Qtr., 2012

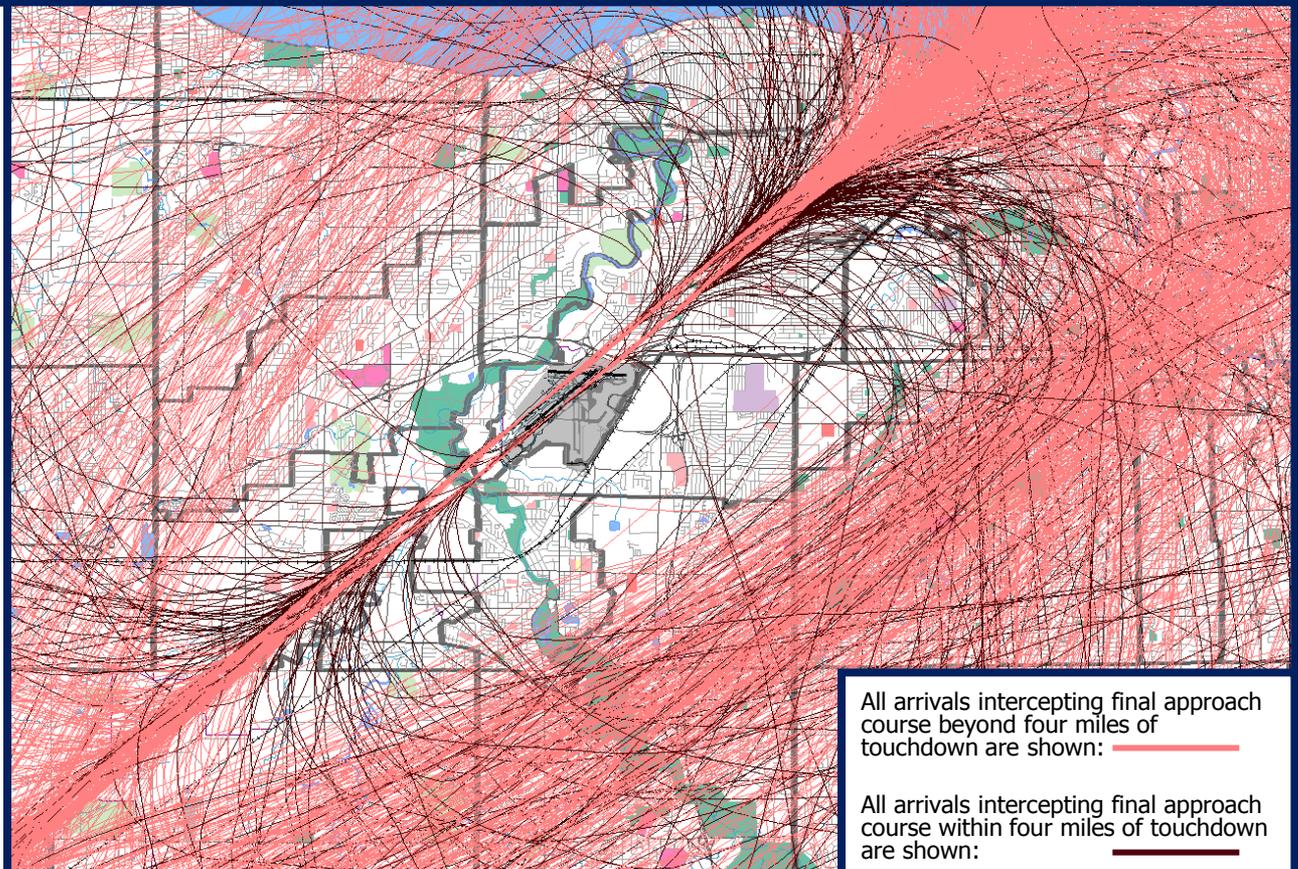
A voluntary measure of the Noise Compatibility Program calls for all aircraft arriving between 10:00 p.m. and 6:59 a.m., wind and weather permitting, to intercept final approach course no closer than four miles before touchdown.

89.2% beyond four miles and
10.8% within four miles

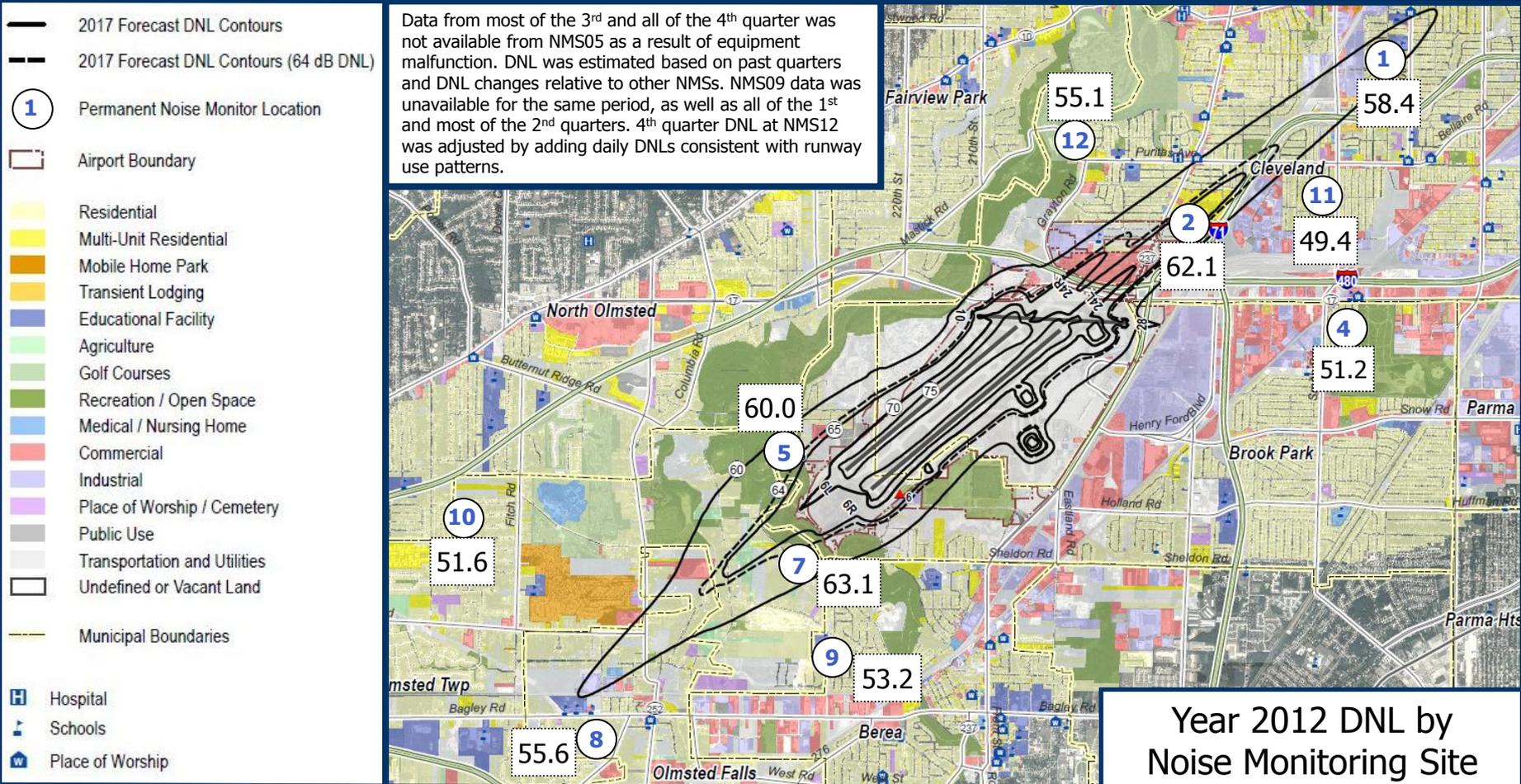
There is no comparable NCP measure regarding day-time arrivals.

Runway use by all arriving aircraft from 10:00 p.m. to 6:59 a.m. during the 4th Qtr., 2012 was as follows:

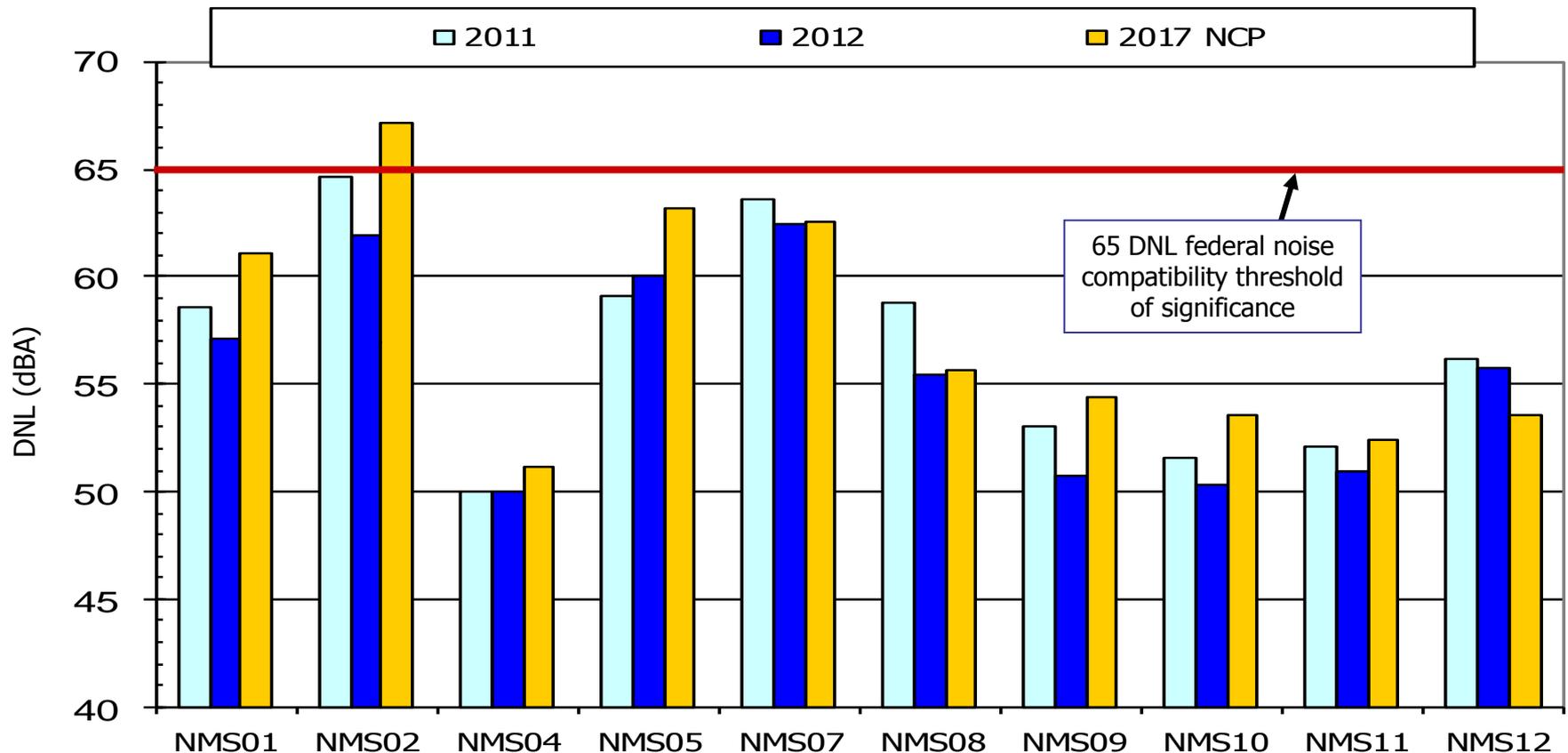
Rwy	Percentage of Arrivals	
	Jets	All Aircraft
10	0.0%	0.0%
28	0.7%	0.8%
24L	24.4%	24.7%
24R	44.4%	44.5%
6L	17.8%	17.9%
6R	12.3%	12.4%



Aircraft Noise

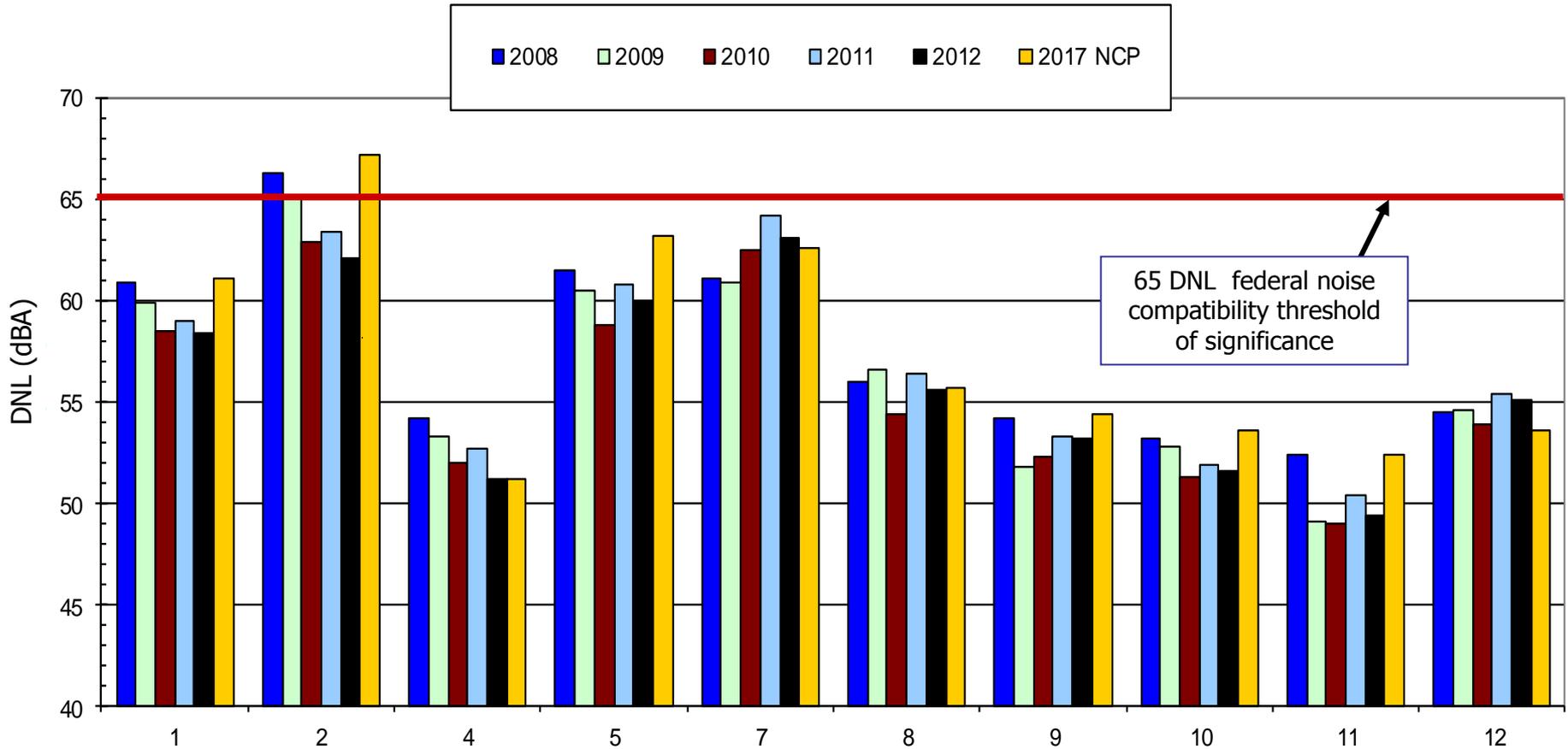


DNL Change from 2011 to 2012



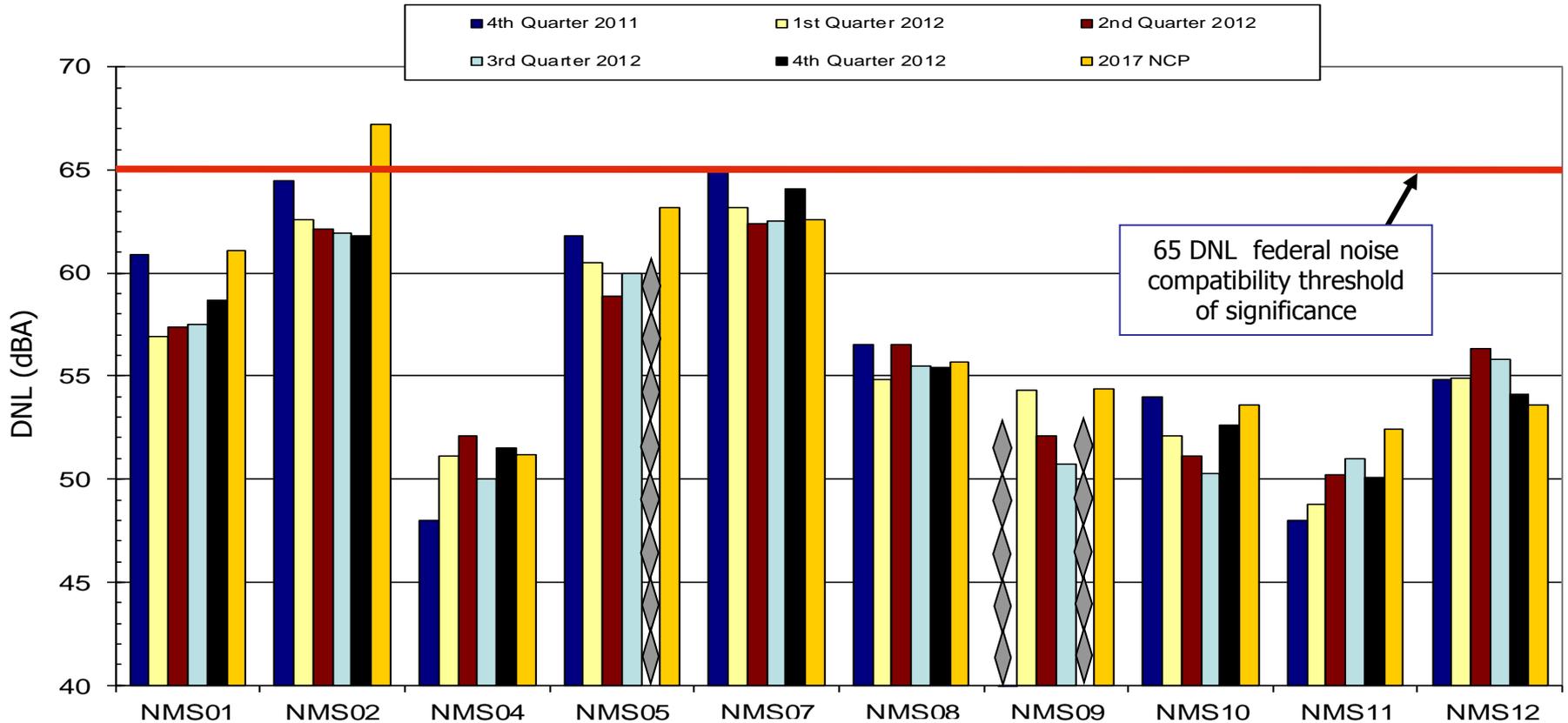
Data from most of the 3rd and all of the 4th quarter was not available from NMS05 as a result of equipment malfunction. DNL was estimated based on past quarters and DNL changes relative to other NMSs. NMS09 data was unavailable for the same period, as well as all of the 1st and most of the 2nd quarters. 4th quarter DNL at NMS12 was adjusted by adding daily DNLs consistent with runway use patterns.

DNL Comparison by Year



Data from most of the 3rd and all of the 4th quarter was not available from NMS05 as a result of equipment malfunction. DNL was estimated based on past quarters and DNL changes relative to other NMSs. NMS09 data was unavailable for the same period, as well as all of the 1st and most of the 2nd quarters. 4th quarter DNL at NMS12 was adjusted by adding daily DNLs consistent with runway use patterns.

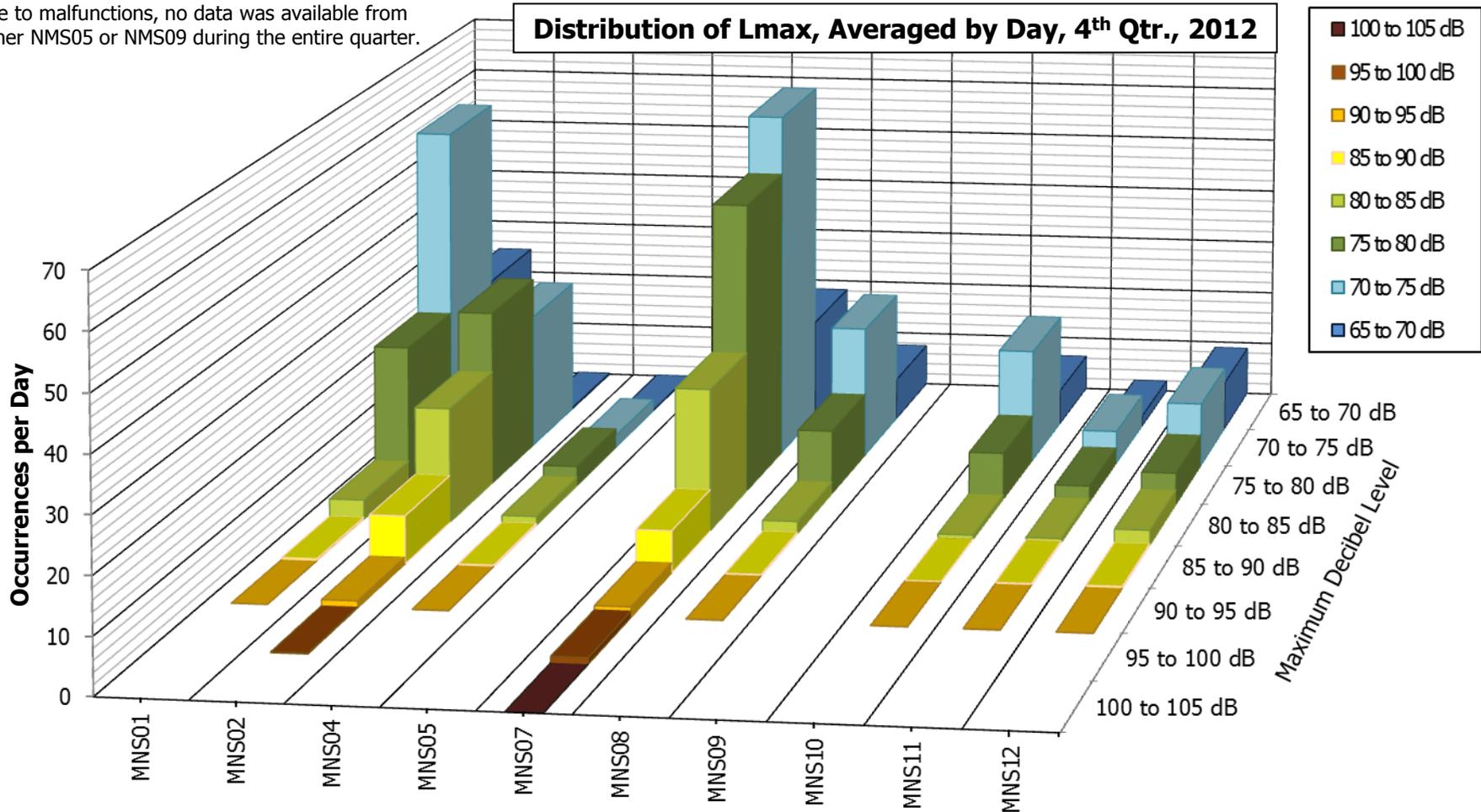
Five Qtr. DNL Comparison



Data from most of the 3rd and all of the 4th quarter was not available from NMS05 as a result of equipment malfunction. DNL was estimated based on past quarters and DNL changes relative to other NMSs. NMS09 data was unavailable for the same period, as well as all of the 1st and most of the 2nd quarters. 4th quarter DNL at NMS12 was adjusted by adding daily DNLs consistent with runway use patterns.

Distribution of Noise Events

Due to malfunctions, no data was available from either NMS05 or NMS09 during the entire quarter.



Top 3 Lmaxs at each NMS, 4th Qtr, (1 of 2)



NMS	Lmax (dB)	Aircraft	Operation	Time and date	Sound Exposure Level (dB)	Duration (sec)
NMS01	91.4	DC9-50	Arrival on Rwy 24L	10/20/2012 8:47 p.m.	97.6	26.5
NMS01	89.9	B727-200	Arrival on Rwy 24R	12/21/2012 10:01 a.m.	96.1	32.0
NMS01	89.6	MD-83	Arrival on Rwy 24L	12/21/2012 2:25 p.m.	96.7	32.5
NMS02	97.9	DC9-50	Departure off Rwy 6R	12/17/2012 4:24 p.m.	105.2	34.5
NMS02	97.1	Military	Arrival on Rwy 24L	10/24/2012 10:35 a.m.	101.3	21.0
NMS02	96.6	Gulfstream 2 business jet	Departure off Rwy 6R	11/2/2012 11:23 a.m.	103.1	29.0
NMS04	94.0	DC9-50	Departure off Rwy 6R	10/30/2012 4:19 p.m.	100.0	25.0
NMS04	91.9	B727-200	Departure off Rwy 6R	12/17/2012 11:13 p.m.	100.0	38.0
NMS04	91.5	DC9-50	Departure off Rwy 6R	10/26/2012 1:13 p.m.	98.1	28.5
NMS05	Not available					
NMS07	100.5	B727-200	Departure off Rwy 24R	12/10/2012 11:00 p.m.	107.7	39.5
NMS07	100.0	DC9-50	Departure off Rwy 24L	12/10/2012 11:31 a.m.	106.4	45.0
NMS07	99.7	DC9-50	Departure off Rwy 24L	12/17/2012 1:29 p.m.	107.1	37.0

Due to equipment malfunctions, no data was available from either NMS05 or NMS09 during the entire quarter.

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

Top 3 Lmaxs at each NMS, 4th Qtr, (2 of 2)

NMS	Lmax (dB)	Aircraft	Operation	Time and date	Sound Exposure Level (dB)*	Duration (sec)
NMS08	91.9	MD-82	Departure off Rwy 24L	10/31/2012 7:03 a.m.	97.9	57.5
NMS08	91.6	DC9-50	Departure off Rwy 24R	11/15/2012 11:11 a.m.	98.4	35.5
NMS08	91.0	DC9-50	Arrival on Rwy 6L	10/29/2012 10:16 a.m.	100.3	53.5
NMS09	Not available					
NMS10	90.3	MD-82	Departure off Rwy 24R	11/11/2012 1:54 p.m.	95.3	39.5
NMS10	88.7	B727-200	Departure off Rwy 24L	11/26/2012 10:57 p.m.	95.4	26.5
NMS10	88.2	B727-200	Departure off Rwy 24L	12/19/2012 11:06 p.m.	94.5	26.5
NMS11	94.5	Gulfstream 2 business jet	Departure off Rwy 6R	11/2/2012 11:23 a.m.	101.8	43.0
NMS11	93.7	DC9-50	Departure off Rwy 6R	12/29/2012 4:36 p.m.	101.7	42.0
NMS11	93.0	DC9-50	Departure off Rwy 6R	10/1/2012 11:11 a.m.	100.9	39.5
NMS12	91.5	MD-83	Departure off Rwy 6R	10/12/2012 6:15 p.m.	97.8	37.5
NMS12	91.2	MD-82	Departure off Rwy 6R	10/12/2012 6:57 a.m.	98.9	37.0
NMS12	90.4	MD-11	Departure off Rwy 6L	11/21/2012 10:34 p.m.	97.7	31.0

Due to equipment malfunctions, no data was available from either NMS05 or NMS09 during the entire quarter.

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

Noise Hotline (216.898.5220)



City	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	2012 Calls	%	2011 Calls	%	2012 Callers	%	2011 Callers	%
Berea	0	0	0	0	0	0.0%	2	1.1%	0	0.0%	2	4.0%
Brook Park	0	1	4	2	7	5.7%	6	3.1%	4	10.3%	4	8.0%
Cleveland	19	23	13	18	73	59.8%	144	75.4%	10	25.6%	12	24.0%
Fairview Park	9	6	5	1	21	17.2%	16	8.4%	13	33.3%	12	24.0%
Lakewood	0	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	0.0%
North Olmsted	1	1	0	0	2	1.6%	1	0.5%	2	5.1%	1	2.0%
Olmsted Falls	0	2	1	0	3	2.5%	4	2.1%	3	7.7%	3	6.0%
Olmsted Twp.	6	0	2	1	9	7.4%	2	1.1%	3	7.7%	2	4.0%
Parma	0	0	0	0	0	0.0%	4	2.1%	0	0.0%	3	6.0%
Parma Heights	0	0	0	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Rocky River	0	1	6	0	7	5.7%	8	4.2%	4	10.3%	7	14.0%
Westlake	0	0	0	0	0	0.00%	1	0.5%	0	0.0%	1	2.0%
Other	0	0	0	0	0	0.0%	3	1.6%	0	0.0%	3	6.0%
Total 2012	35	34	31	22	122	100.0%	-	-	39	100.0%	-	-
Total 2011	41	61	50	39	191	100.0%	191	100.0%	50	100.0%	50	100.0%

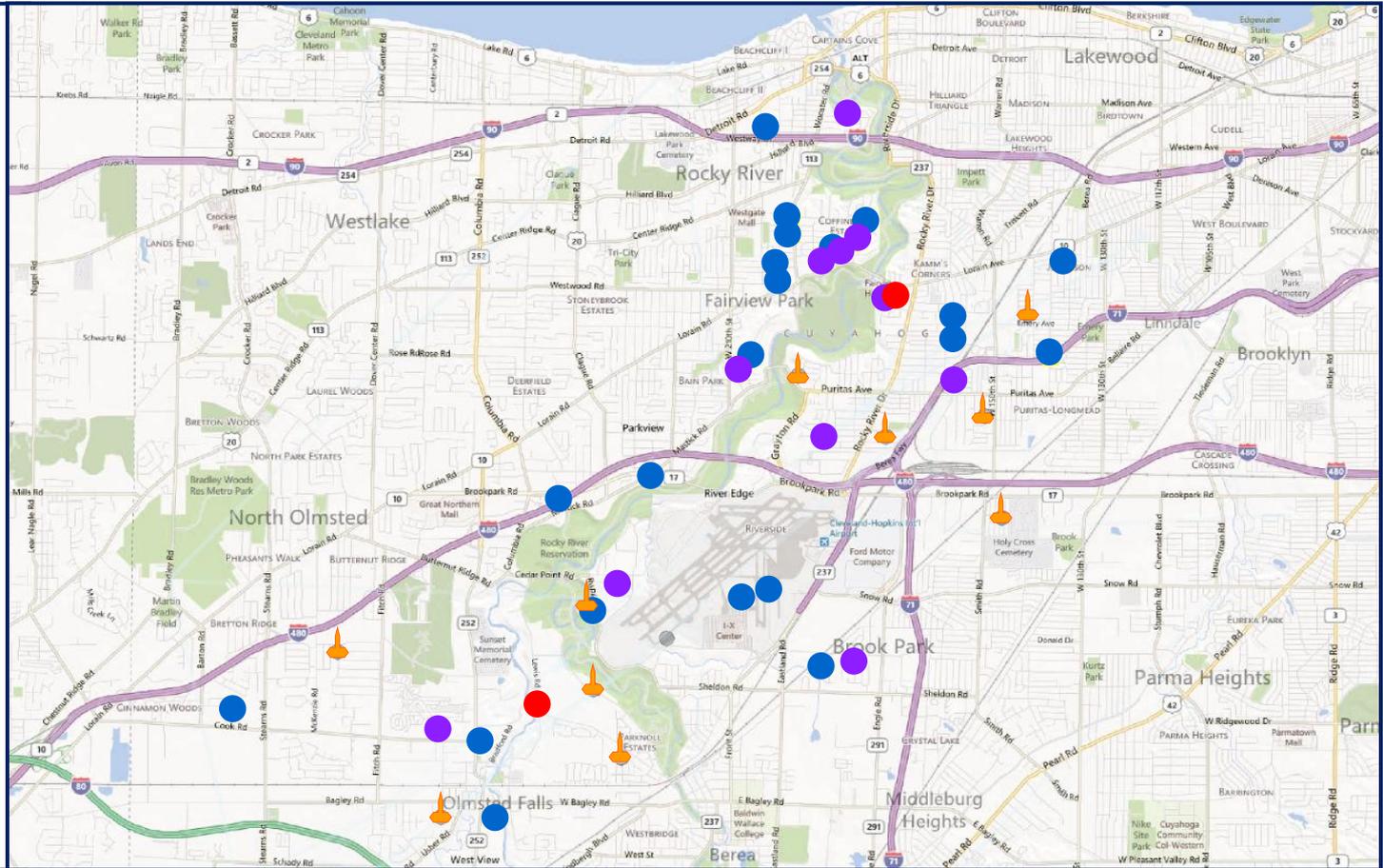
There was a 36.1% reduction in noise complaints for Year 2012, as compared to Year 2011.

2012 Annual Complaint Map

LEGEND

Complaints per household

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



2013 Forward Plan



- Implement Part 150 measures that obtained FAA approval
- Continue coordination with the Air Traffic Control Tower
- Issue a Request for Qualifications for a consultant to evaluate the current Noise and Operations Monitoring System and make recommendations for new equipment
- The Labor Day Weekend Airshow held at Burke Lakefront Airport is cancelled due to federal budget constraints.
- Construction on Taxiway N (November) is scheduled to begin mid to late spring and may affect availability of Pad 7 for run-ups.
- Runway 6R/24L will be closed May through August to most operations due to construction at the 6R end of the runway.

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