A large, faint watermark of the U.S. Environmental Protection Agency (EPA) logo is centered in the background. The logo features a stylized flower with three leaves and a circular head, surrounded by the text "UNITED STATES ENVIRONMENTAL PROTECTION AGENCY".

Near-road Air Quality Monitoring Network: Status and Data

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U.S. EPA

Office of Air and Radiation

Office of Air Quality Planning and Standards

Near-Road Monitoring Requirements



Implementation Phase	CBSA Population	NO ₂	CO*	PM _{2.5} *
<i>Phase 1</i> 52 Sites [funded]	≥ 1 Million	Jan 1, 2014	Jan 1, 2015 for CBSAs ≥ 2.5M Jan. 1, 2017 for CBSAs ≥ 1M and ≤ 2.5M	Jan 1, 2015 for CBSAs ≥ 2.5M Jan. 1, 2017 for CBSAs ≥ 1M and ≤ 2.5M
<i>Phase 2</i> 23 Sites (second sites) [funded]	≥2.5 Million OR road segment ≥250,000 AADT (NO ₂ only)	Jan 1, 2015 (second site)		
<i>Phase 3</i> 51 Sites [unfunded]	Between 500K and 1 Million	Jan 1, 2017	Proposed to be removed	

*Near-road CO and PM_{2.5} monitors are required to be co-located with an NO₂ monitor.

Near-road NO₂ Network Status

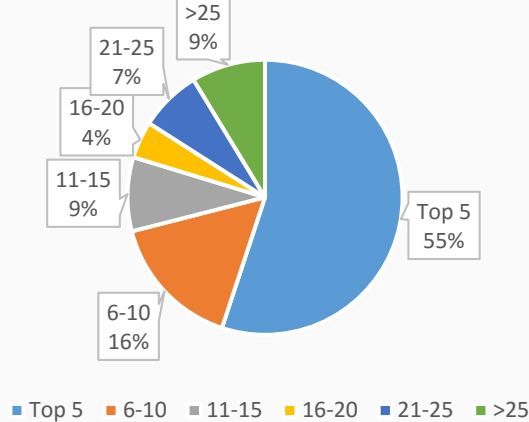


- Currently, the EPA estimates that there are 69 operational near-road monitoring sites
- Phase 1 sites: 49 of 52 sites operational
 - *Missing CBSAs*: Chicago, Salt Lake City, Virginia Beach
- Phase 2 sites: 17 of 23 sites operational
 - *Missing CBSAs*: Boston, Chicago, Miami, New York, San Diego, San Juan
- Phase 3 sites: Boise, Des Moines, and Fresno are operational
 - Bakersfield scheduled

Near-Road Monitoring – Target Roadway Characteristics



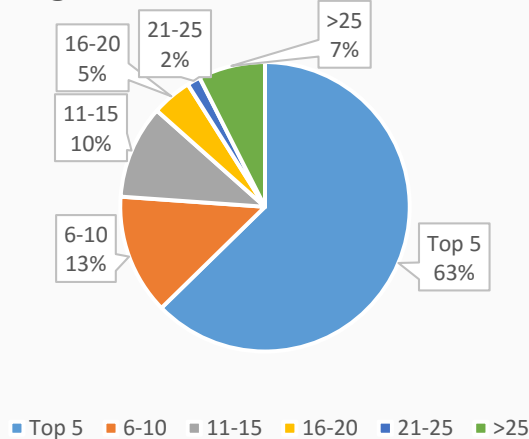
Target Road AADT - CBSA Ranks



➤ The network targets the most highly trafficked roads in our nation's CBSAs

- 21 sites along #1 ranked road segment for AADT in their respective CBSA
- 20 sites along #1 ranked road segment for FE-AADT* in their respective CBSA

Target Road FE-AADT - CBSA Ranks



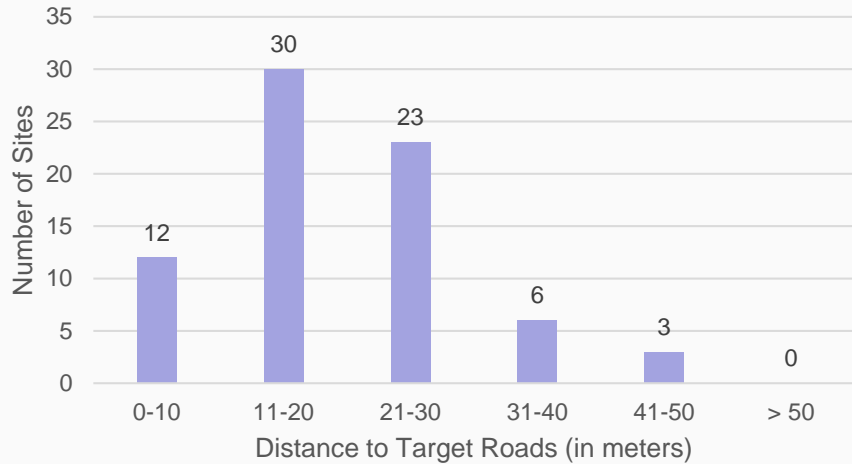
- ~71% of sites along a top 10 ranked AADT road segment
- ~76% of sites along a top 10 ranked road segment for FE-AADT

*Fleet Equivalent AADT (FE-AADT) is a single metric accounting for both traffic volume and fleet mix (diesel vs gasoline ratio)

Near-Road Monitoring Site Characteristics

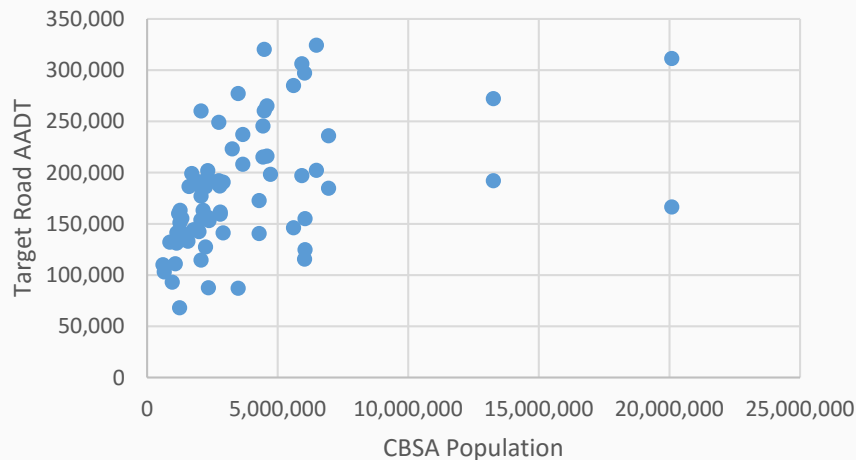


Distance to Target Road

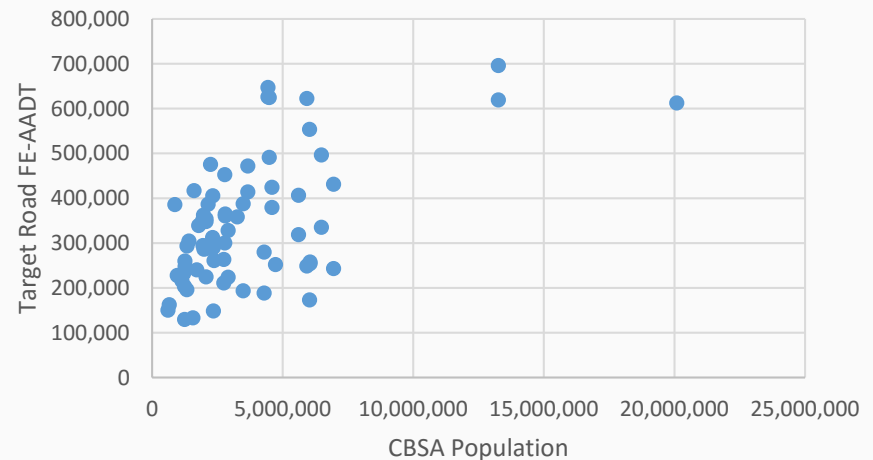


- ~57% of sites within 20 meters of target roads
- ~89% of sites within 30 meters of target road
- CBSAs with higher populations tend to have monitors at higher trafficked roads (for both AADT & FE-AADT)

Target Road AADT & CBSA Population



Target Road FE-AADT & CBSA Population



Near-road NO₂ Data Summary



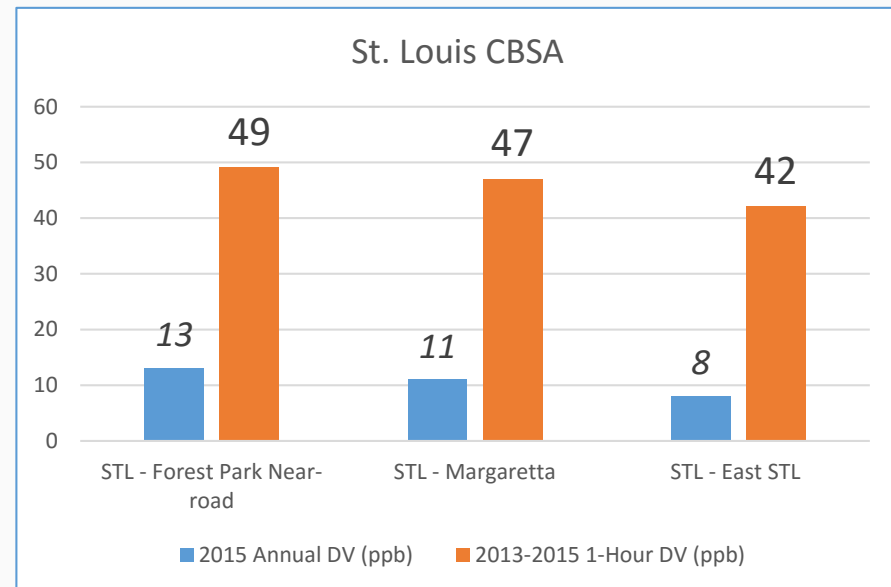
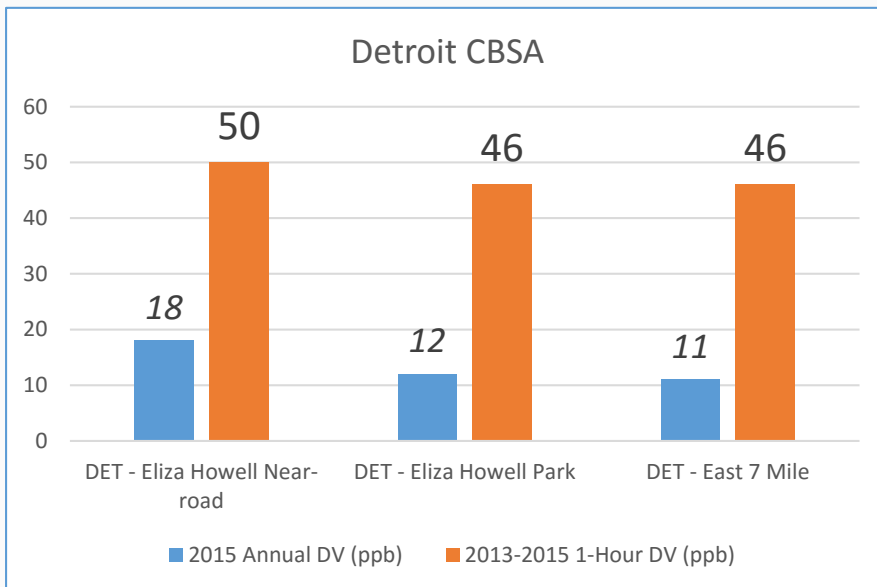
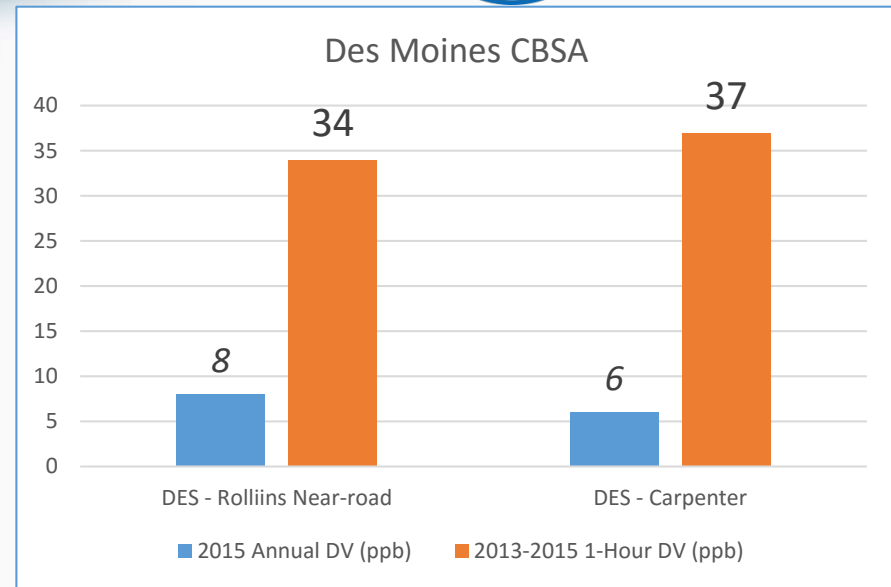
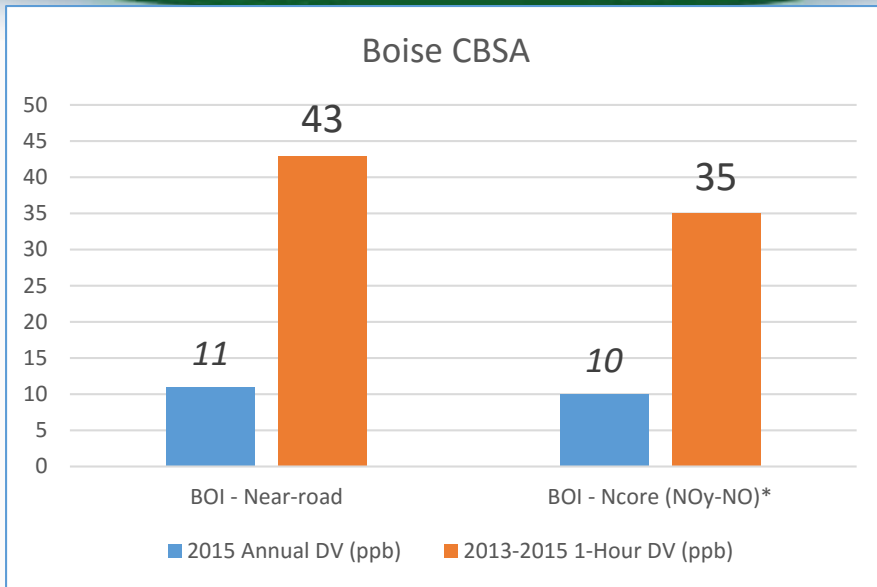
- NO₂ NAAQS:
 - Annual Mean: 53 ppb
 - 98th percentile 1-hour daily maximum averaged over 3 years: 100 ppb
- Currently, no area of the country is violating the NO₂ NAAQS
 - Highest 2015 annual average design value: 30 ppb (Riverside - Etiwanda NR)
 - Highest 1-hr (2013-2015) design value: 70 ppb (Denver – CAMP site)
 - Highest 98th percentile 1-hr daily max value of 2015: 77.2 ppb (Riverside – Rt. 60 NR)

<i>Near-road NO₂ Data</i>	Sites Reporting Any Data	Sites with Complete Data (≥75%)	CBSAs Where Top Annual DV Was Near-road	CBSAs Where Top 98th %-ile 1Hr Daily Max Value Was Near-road*
Year				
2013	10	4	~100% (4 of 4)	~75% (3 of 4)
				~65% (31 of 48) ^{^*}

[^]Some CBSAs have two near-road sites

*These data reflect all hourly data, regardless of completeness

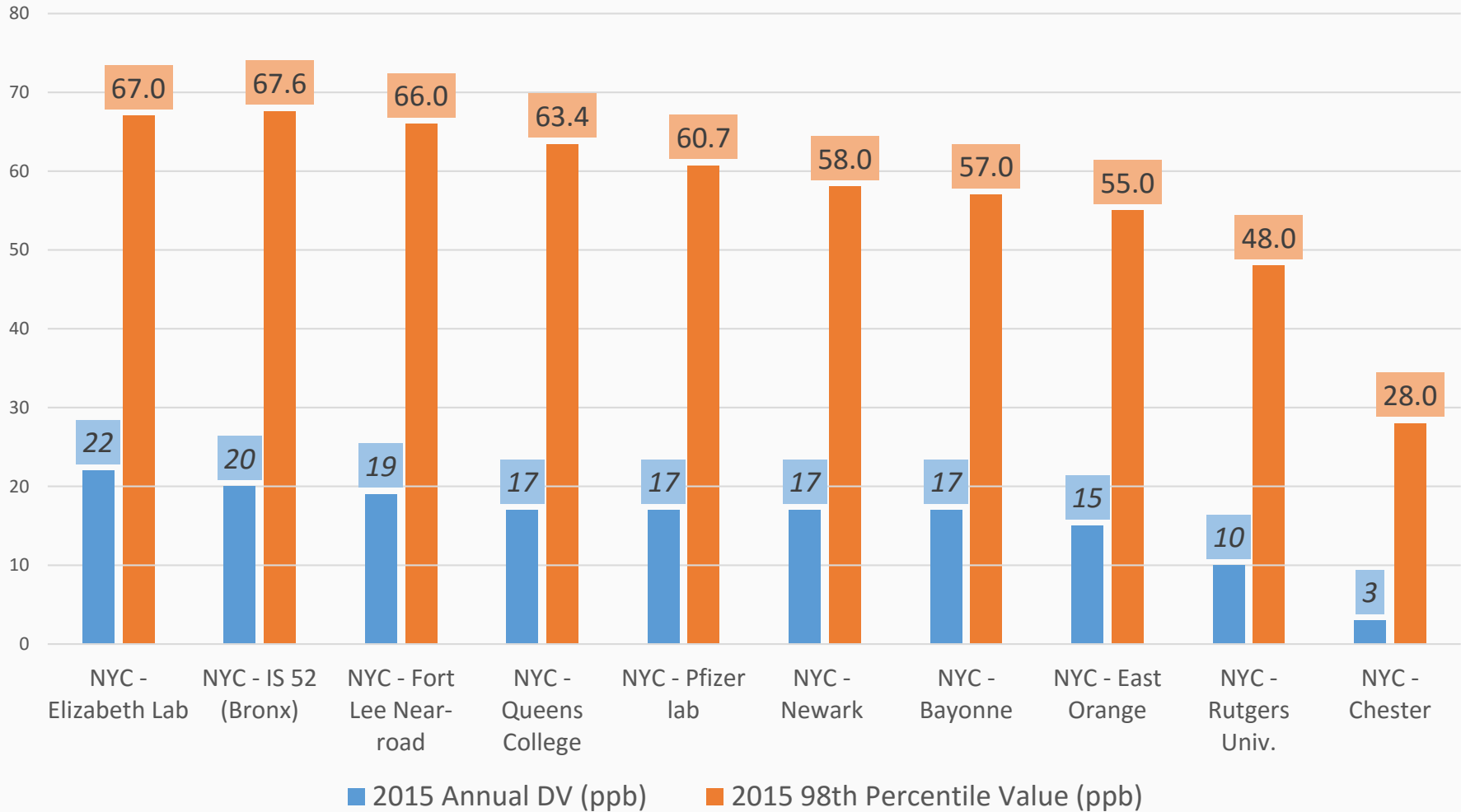
Near-road CBSAs with DVs for both forms of the NO₂ NAAQS



2015 New York CBSA-wide NO₂ (ppb)



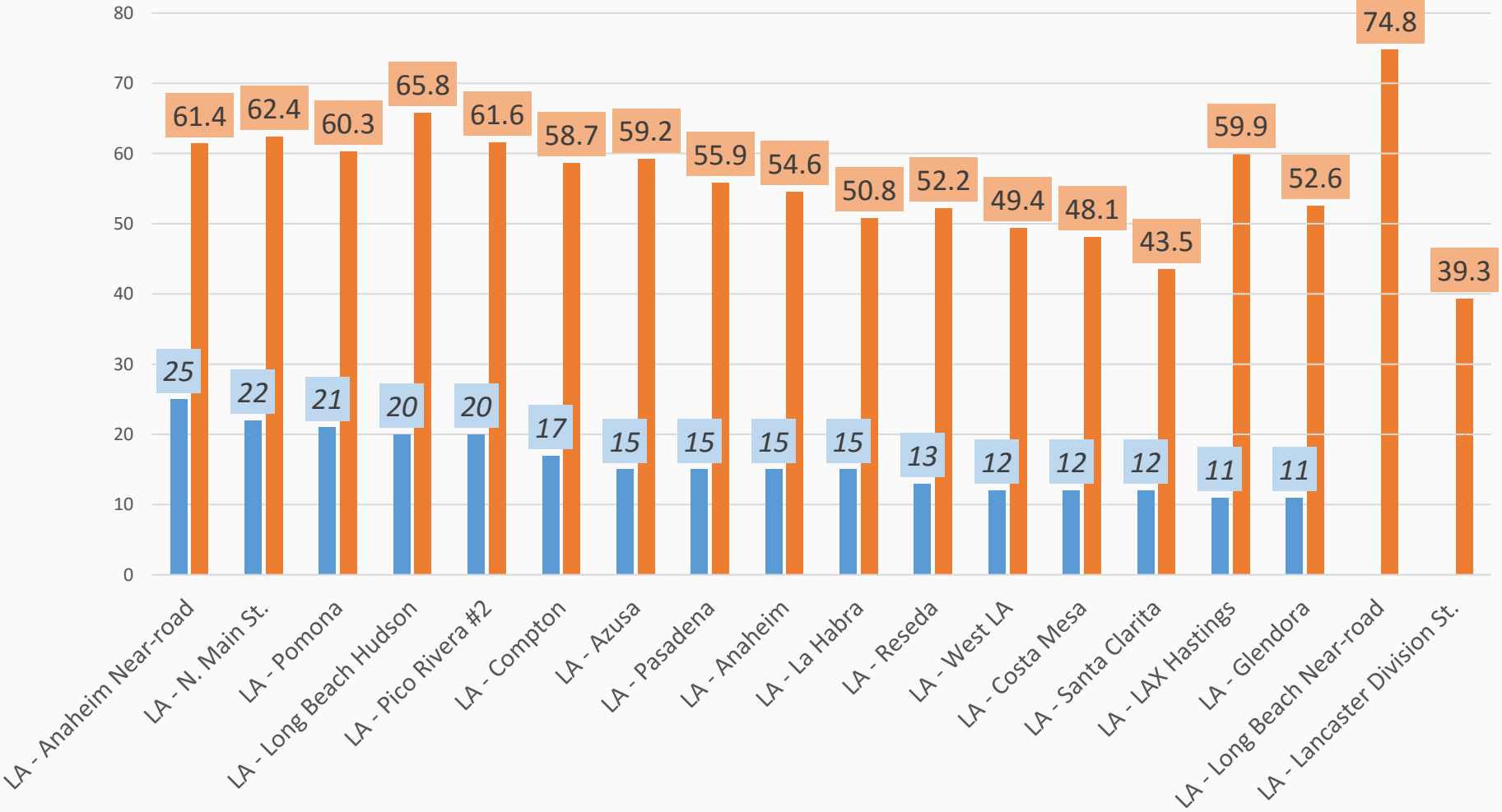
New York CBSA - NO₂



2015 Los Angeles CBSA-wide NO₂ (ppb)



Los Angeles CBSA - NO₂



■ 2015 Annual DV (ppb) ■ 2015 98th Percentile Value (ppb)

Near-road vs. Non-Near-road



- 2010 NO₂ NAAQS rulemaking considered a literature-based, near-field “gradient” of 30 to 100%
- Comparison of top near-road (NR) to top non-near-road (NNR) NO₂ values within a CBSA can reveal something akin to a gradient at a wider scale (comparisons are not same-hour comparisons)

Valid 2015 Annual DV Comparison

- 43 CBSAs compared
- Range of intra-CBSA differences
+13 to -4 ppb; Median: 4
- Range of percent change from
NNR to NR:
+275% to -31%; Median 44%

Available 2015 1-Hr Daily Max Value Comparison

- 48 CBSAs compared
- Range of intra-CBSA differences
+21.4 to -14.3 ppb; Median: 3.8
- Range of percent change from
NNR to NR:
+49% to -22.7%; Median 8.1%

Near-road Sites: Multi-pollutant



- Near-road sites have always been envisioned to be multipollutant
- In addition to NO₂ at all Near-road sites, we currently estimate:
 - 38 sites with PM_{2.5} instrumentation
 - 49 sites with CO instrumentation
 - 20 sites with black carbon instruments
- For a complete listing of current near-road site metadata, visit <http://www.epa.gov/ttnamti1/nearroad.html>

Near-road PM_{2.5} & CO



- Near-road PM_{2.5} & CO monitors are required in every CBSA with 1 million or more persons and to be co-located with a near-road NO₂ monitor
- PM_{2.5} NAAQS:
 - 98th percentile of the 24-hour averages, averaged over 3 years: 35 ug/m³
 - Annual mean, averaged over 3 years: 12.0 ug/m³
- For PM_{2.5}, States have the option of running filter based FRM instruments (providing 24 hour averages) or continuous FEMs (providing more highly time-resolved data)
- By default, near-road PM_{2.5} data are subject to comparison to both the daily and annual NAAQS
- CO NAAQS:
 - 8-hour standard, not to be exceeded more than once per year: 9 ppm
 - 1-hour standard, not to be exceeded more than once per year: 35 ppm

Highest Near-road PM_{2.5} Concentrations (1 year snapshot of complete data only)

Year	CBSA	24-hr 98 th %-ile	Annual Mean
2015	Riverside	39.9	14.5
	San Francisco-Oakland	27.9	10.0
	San Jose	27.5	8.4
	Philadelphia	27.4	10.7
	New York	27.0	11.3
	Denver	26.2	9.9
	Detroit	25.2	9.5
	Birmingham	23.6	11.8
	Hartford	22.8	9.9
	Providence	22.7	9.8
	Buffalo	22.7	9.3
	Tampa	22.6	9.8
	Atlanta	22.5	10.5
	Indianapolis	22.5	11.5
	Louisville	22.1	10.0

UNITS in ug/m3 *THESE ARE NOT DESIGN VALUES*****

Highest Near-road CO Concentrations (Valid Design Values)

Year	CBSA	1-hour	8-hour
2015	San Juan, PR	8.4	2.5
	Pittsburgh	4.9	2.8
	Memphis	4.5	2.0
	Providence	3.5	1.8
	Phoenix	3.2	2.6
	Los Angeles	2.9	2.3
	Denver	2.8	2.0
	New Orleans	2.7	2.3
	Riverside	2.7	2.5
	San Jose	2.6	1.8
	Atlanta	2.3	1.8
	Houston	2.3	1.7
	Washington	2.3	2.0
	Detroit	2.2	1.7
Seattle	2.2	1.4	

UNITS in PPM

Proposal: Remove Phase 3 of Near-road Network



- Proposed rule signed Thursday May 5th and published May 16th
 - 81 FR 30224; EPA-HQ-OAR-2015-0486
 - 45 day public comment period – closed June 30, 2016
- The EPA is proposing to remove requirements for near-road NO₂ monitoring in CBSAs having populations between 500,000 and 1,000,000 persons (also known as Phase 3)
- This proposal is based on current data and an evaluation of the relationship between CBSA populations, traffic, and measured NO₂ concentrations
 - Current near-road NO₂ data being measured in our larger urban areas indicate air quality levels in the near-road environment are generally well below the NAAQS for NO₂
 - The EPA expects measured near-road NO₂ concentrations in relatively smaller CBSAs would exhibit similar and, more likely, lower concentrations that what is being measured in larger urban areas
 - This action would relieve states of installing an estimated 53 new near-road sites
- This action does not impact Phase 1 or 2 of the near-road NO₂ network, nor does it impact requirements for monitoring PM_{2.5} and CO in the near-road environment.

Proposal: Remove Phase 3 of Near-road Network (cont.)



- 22 Public comment submissions received
 - 14 State, local, tribal, or multi-agency organizations
 - 4 Industry
 - 3 Public health or environmental organizations
 - 1 Anonymous public comment
- 18 Support the proposed rule
- 3 Provided adverse comment
- 1 Comment outside scope of proposal
- The Notice of Final Rulemaking is currently being drafted.
 - The EPA hopes to have a signed NFR no later than the end of the calendar year
 - Waiting on OMB significance determination



Near-road Next Steps...

- Complete the rulemaking action where we proposed the revision to the near-road NO₂ monitoring requirements
- Oversight on remaining installation of required sites
 - EPA Regions and HQ are tracking installations & are available to assist
- Continue updating near-road site metadata
 - Characterizing the sites is critical to data analyses
- Data reporting
 - Real-time reporting
- Continue analyzing data as it is reported
 - NO₂ NAAQS Review is utilizing the new NO₂ data
 - Prepare for near-road data use in future NAAQS reviews
 - Continue providing periodic updates to stakeholders
 - Promote and track near-road data use in health and science research