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2015 Ozone NAAQS Designations: Lake and Porter Counties, IN and Kenosha County, WI (Chicago, IL-IN-WI Nonattainment Area)
Briefing for Bill Wehrum
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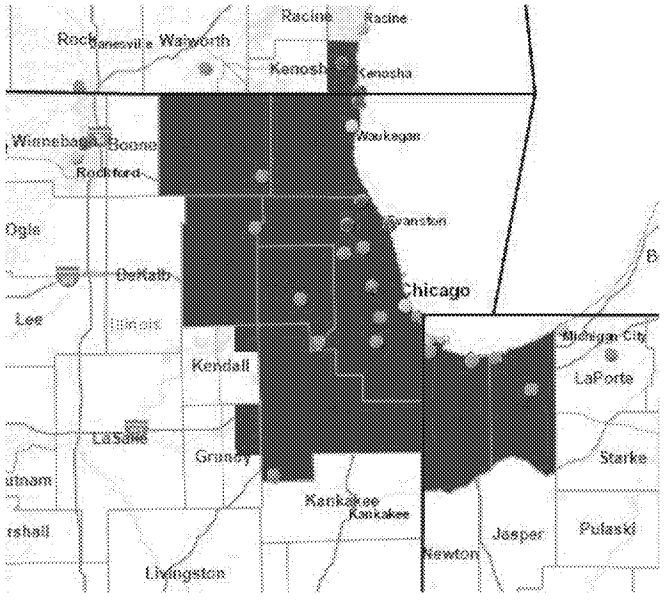
EPA's intended nonattainment area (120-day letters) for Chicago is a multi-state area that includes full county designations for Lake and Porter Counties, IN and a partial county for Kenosha County, WI and 8 counties in Illinois (Cook, DuPage, Grundy (partial), Kane, Kendall (partial), Lake, McHenry, and Will). The proposed area, including partial county boundaries) is identical to the 2008 area.

Figure 1 Chicago proposed nonattainment area is identical to the 2008 area (shaded in blue). Red circles indicate violating monitors, while green monitors indicate monitors that attain with 2014-2016 data.



State Recommendations

- Illinois recommended the 2008 historic area; EPA proposed same.
- Indiana recommended that Lake and Porter Counties be designated as attainment.
- Wisconsin recommended that Kenosha County be designated as attainment; if EPA does not designate Kenosha County as attainment, Wisconsin recommended that the nonattainment area be limited to a narrow strip of land extending 4.2 miles inland from the Lake Michigan shoreline.

Potential Options for a Final Nonattainment Designation

1. EPA's proposed boundary.
2. Attainment for all Indiana and Wisconsin counties.
3. Reduce the size of the nonattainment portion of Kenosha County, WI.
4. Some combination of options 2 and 3.

Option 1: Finalize EPA's proposed boundary (same as 2008 area)

Background

- Initial area of analysis was 19-county Chicago CSA.
- Eliminated 8 counties due to low contribution.

Air Quality Data

- Illinois: three violating monitors in Cook County (72, 71, 71 ppb), and one in Lake County (73 ppb). Additional Cook County monitors will show violations in 2017.
- Wisconsin: two violating monitors in Kenosha County (77 and 71 ppb).
    - Indiana: no violating monitors.

Table 1. Air Quality Data (ppm) in the intended Chicago, IL-IN-WI nonattainment area. Values in bold exceed the NAAQS.

County, State	State Recommended Nonattainment?	AQS Site ID	2014-2016 DV	2015-2017 preliminary DV
Cook, IL	Yes	170310001	0.069	**0.073**
		170310032	0.070	**0.072**
		170310076	0.069	**0.072**
		170311003	0.069	0.067
		170311601	0.069	0.069
		170313103	0.062	0.062
		170314002	0.066	0.068
		170314007	**0.071**	**0.071**
		170314201	**0.071**	**0.072**
		170317002	**0.072**	**0.073**
DuPage, IL	Yes	170436001	0.068	0.070
Grundy, IL	No monitor			
Kane, IL	Yes	170890005	0.068	0.069
Kendall, IL	No monitor			
Lake, IL	Yes	170971007	**0.073**	**0.073**
McHenry, IL	Yes	171110001	0.068	0.069
Will, IL	Yes	171971011	0.064	0.065
Lake, IN	No	180890022	0.067	0.068
		180890030	N/A	N/A
		180892008	0.065	0.065
Porter, IN	No	181270024	0.069	0.069
		181270026	0.066	0.069
Kenosha, WI	No	550590019	**0.077**	**0.078**
	No	550590025	**0.071**	**0.073**

Review of emissions (see **Figure 2** for locations of point sources)

- Lake County, IN has the 2nd highest NOx emissions and 3rd highest VOC emissions in the CSA. This level of emissions is comparable to the highest emitting county in other nonattainment areas; e.g., Hamilton County in the Cincinnati area, Cuyahoga County in the Cleveland area, and Franklin County in the Columbus area.

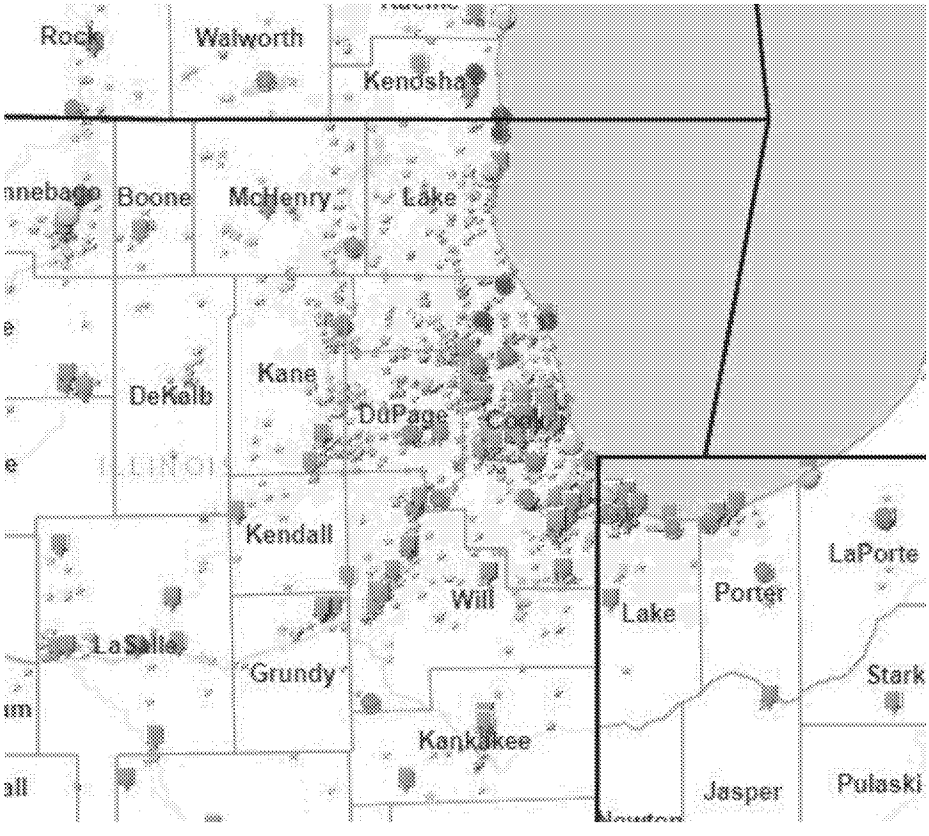
- Porter County, IN also has significant emissions, with the 6th highest NOx emissions and 8th highest VOC emissions in the CSA. Porter County emissions are greater than or comparable to emissions from the second highest emitting counties in the Cincinnati, Cleveland, and Columbus areas.

Table 2. Total emissions in each county in proposed nonattainment area

County	Total NOx (tpy)	Total VOC (tpy)
Cook, IL	95,864	86,253
Lake, IN	28,923	15,309
Will, IL	23,750	14,607
DuPage, IL	22,000	19,742
Lake, IL	17,615	15,143
Porter, IN	16,649	6,090
Kane, IL	11,335	10,533
McHenry, IL	6,675	6,353
Kenosha, WI*	6,034	3,290
Grundy, IL*	3,582	2,120
Kendall, IL*	3,025	3,251
Total	*235,452*	*182,691*

**EPA proposed partial county; emissions shown are from entire county*

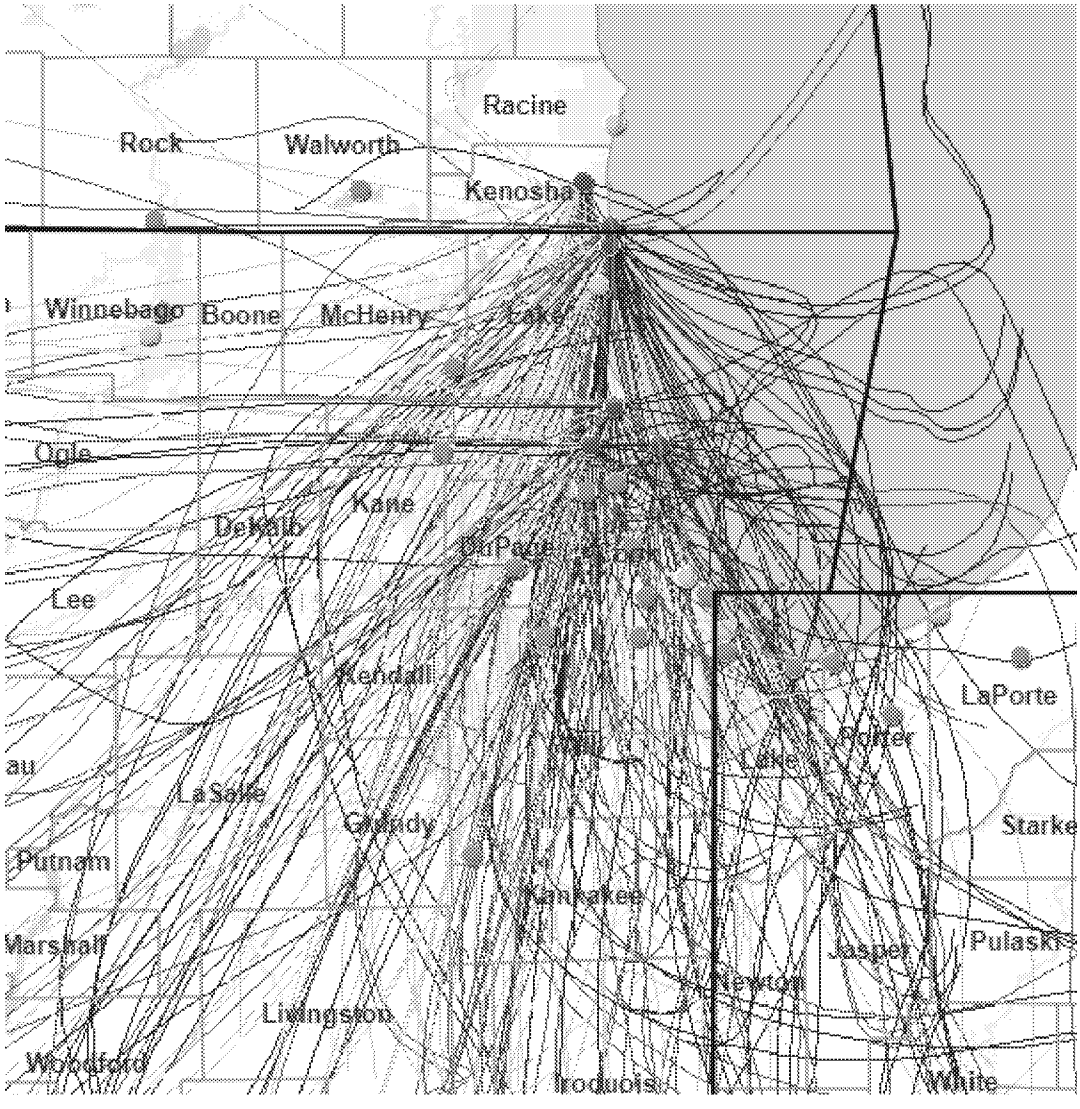
Figure 2. 2014 large (orange squares) and small (yellow stars) point source emissions.



Review of meteorology

- Indiana: HYSPLIT shows strong potential for contribution from emissions sources in Lake and Porter Counties.
- Wisconsin: HYSPLIT shows that Kenosha County is being impacted by transport but Kenosha County emissions sources south, southeast, and southwest of the violating monitors also have potential to contribute.

Figure 3. HYSPLIT Trajectory Analysis [Red=100 m, Blue=500 m, Green=1000 m]



Option 2: Attainment for Indiana and Wisconsin counties

Considerations

Indiana

- This option is consistent with Indiana's recommendation
  - In its response to the 120-day letter, Indiana reiterated its recommendation that Lake and Porter Counties be designated as attainment, but provided no additional technical support, except for a table of historical monitoring data, including preliminary 2017 data, showing attainment of the applicable NAAQS at the Indiana monitors.
  - Indiana did not address EPA's proposed inclusion of Lake and Porter based on contribution.
- This option is inconsistent with contribution conclusions in past designations
  - Lake and Porter were included in 2008 area, based on contribution.
  - Indiana sued EPA after the 2008 designations, but inclusion in the nonattainment area was upheld by D.C. Circuit.
- This option is inconsistent with inclusion of Illinois counties
  - NOx and VOC emissions from Lake County, IN and Porter County, IN are in the top or middle of the pack relative to included Illinois counties.
- This option is inconsistent with EPA decisions for other areas.

Wisconsin

- This option has significant legal risk, since the Kenosha County has two violating monitors.

Option 3: "Distance from Shoreline" boundary (See **Figure 4**)

Considerations

- Wisconsin requested that if EPA designates that area as nonattainment, that the area be limited to land extending 4.2 miles inland from the Lake Michigan shoreline.
- Wisconsin suggested using the Ordinary High-Water Mark (OHWM) as a reference point for the 4.2-mile inland nonattainment area but did not provide details on how this would be implemented in practice. Using OHWM presents implementation challenges.
  - OHWM changes about every 30 years and is commonly disputed in litigation by individual landowners.
  - Background on the OHWM
    - States can each set their own OHWM.

- US Army Corps of Engineers uses federal OHWM as a jurisdictional boundary for administering its regulatory program in navigable waterways under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.

Figure 4. Kenosha County, Wisconsin. Green area represents EPA's intended designation; hatch marks represent the state's alternate recommendation.

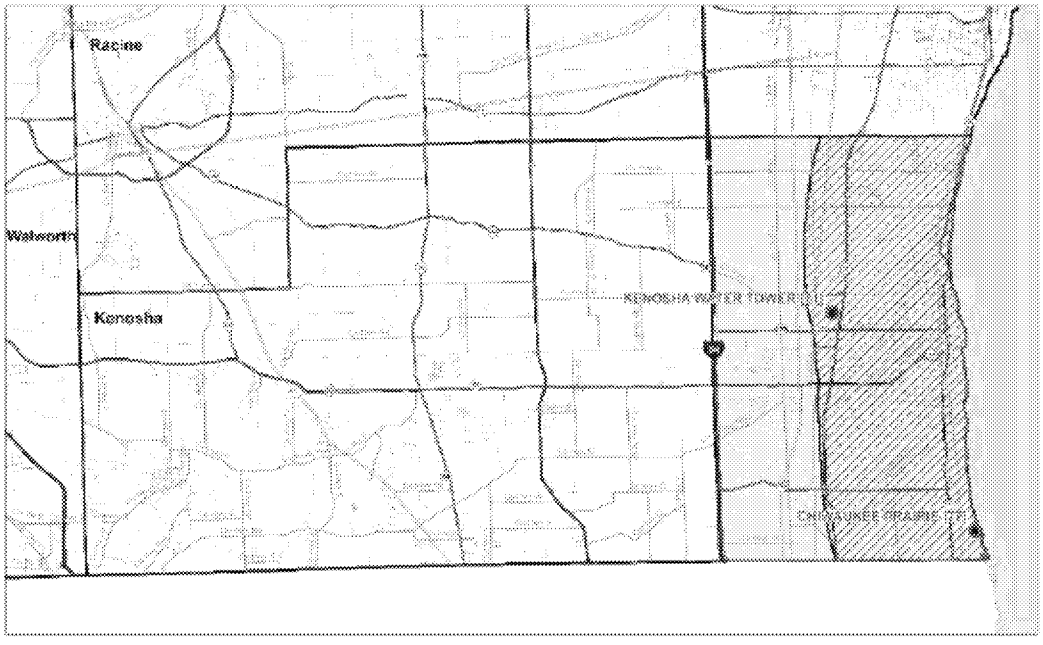


Table 3. Guide to distances in Kenosha County, WI

	Distance from shoreline (miles)
Shoreline monitor (77 ppb)	0.15
Inland monitor (71 ppb)	3.6
Boundary requested by state	4.2
EPA proposed boundary (same as 2008)	7
Walworth County monitor (west of Kenosha) (70 ppb)	20

- This option arguably does not cover the entire area that is above the ozone standard; both monitors in Kenosha are violating the standard.
  - Shoreline monitor (0.15 miles from Lake Michigan) is at 77 ppb.
  - Inland monitor (3.6 miles from Lake Michigan) is at 71 ppb.
  - Wisconsin installed the inland monitor to demonstrate that nonattainment problems don't extend inland, but it does violate the NAAQS.
  - Unlike areas further north along the Lake Michigan shoreline, there is no clear support for the premise that parts of Kenosha further inland are attaining the standard.

  - The nearest attaining monitor is in Walworth County (directly west of Kenosha), approximately 20 miles from the shore of Lake Michigan, and has a 2014-2016 design value of 70 ppb.
- This option is inconsistent with Kenosha County (partial county) for 2008 area, which was based on contribution to violating monitors.
  - Partial county was defined as the area inclusive and east of I-94, roughly 7 miles from shoreline.
  - Including I-94 adds additional sources south of the monitor and brings I-94 into transportation conformity planning.

Option 4: Some combination of options 2 and 3

Example: Designate Lake and/or Porter Counties as attainment and use distance from shoreline boundary for Kenosha County

- Considerations set forth under Options 2 and 3 apply.