

### **3.0 Addendum to the EPA Technical Analysis for the Harrisburg-Lebanon-Carlisle-York, Pennsylvania Area**

The following chapter is an addendum to the December 2008 Technical Analysis for the 2006 24-hour PM<sub>2.5</sub> NAAQS Harrisburg-Lebanon-Carlisle-York Nonattainment Area. This addendum provides the technical rationale for including York County, Pennsylvania, along with Dauphin, Cumberland, and Lebanon Counties in Pennsylvania, in the Harrisburg-Lebanon-Carlisle-York nonattainment area for the 2006 24-hour PM<sub>2.5</sub> national ambient air quality standards (NAAQS).

**Background:** In December 2007, based on air quality data from 2004-2006, the Commonwealth of Pennsylvania (Pennsylvania) recommended that: 1) Cumberland, Dauphin, and Lebanon Counties in Pennsylvania be included in the Harrisburg-Lebanon-Carlisle nonattainment area and 2) York County in Pennsylvania be included in the York nonattainment area for the 2006 24-hour PM<sub>2.5</sub> standard. In August 2008, EPA notified Pennsylvania of its intended designations. EPA based its intended designations on 2005-2007 air quality data and, in the notification letter, EPA supported Pennsylvania's recommendations for these two areas. While EPA's technical analyses for these areas indicated that York County was contributing to PM<sub>2.5</sub> violations in the Harrisburg-Lebanon-Carlisle area, other factors in EPA's technical analyses at that time supported Pennsylvania's recommendation to keep York County in a separate nonattainment area. In the December 22, 2008 designation notice for the 2006 24-hour PM<sub>2.5</sub> NAAQS that was signed by then Administrator Johnson but never published, EPA designated Cumberland, Dauphin, and Lebanon Counties as the Harrisburg-Lebanon-Carlisle, Pennsylvania nonattainment area and York County as the York, Pennsylvania nonattainment area.

**Consideration of 2008 Data:** The December 22, 2008 designation notice for the 2006 24-hour PM<sub>2.5</sub> NAAQS was signed by former Administrator Johnson; however, this notice was not published in the Federal Register, and therefore was never promulgated under Clean Air Act (CAA) section 107(d)(2). EPA reviewed the December notice as instructed. [See the January 20, 2009 "Regulatory Review" Memorandum for the Heads of Executive Departments and Agencies from Rahm Emanuel, Assistant to the President and Chief of Staff.] Subsequently, EPA received and analyzed air quality monitoring data for the period 2006-2008. EPA determined that it was appropriate to consider 2008 ambient air quality data, the most recent air quality data, and base the designations for the 2006 24-hour PM<sub>2.5</sub> NAAQS on the 2006-2008 data. Whereas the 2005-2007 air quality data indicated that York County violated the 2006 24-hour PM<sub>2.5</sub> NAAQS, the 2006-2008 air quality data indicates that York County is currently attaining the NAAQS. If an area is meeting the NAAQS, EPA does not have authority pursuant to CAA Section 107, to designate such area as nonattainment area based on a monitored violation. Thus, EPA could no longer designate York County as a separate nonattainment area. However, because EPA's technical analysis for the Harrisburg-Lebanon-Carlisle area indicated that emissions from York County are contributing to violations of the 2006 24-hour PM<sub>2.5</sub> NAAQS in the Harrisburg-Lebanon-Carlisle area, EPA, in accordance with the CAA, revisited the designation for the Harrisburg-Lebanon-Carlisle area to determine if it was appropriate to now include York County in that nonattainment area.

**Conclusion:** EPA has determined that emissions from York County are contributing to monitored violations of the 2006 24-hour PM<sub>2.5</sub> NAAQS such that the county should be included in the Harrisburg-Lebanon-Carlisle nonattainment area. Based on EPA's technical analysis conducted for the Harrisburg-Lebanon-Carlisle area for the December 22, 2008 PM<sub>2.5</sub> designation notice, EPA is designating Cumberland, Dauphin, Lebanon, and York Counties, as nonattainment for the 2006 24-hour PM<sub>2.5</sub> NAAQS as part of the Harrisburg-Lebanon-Carlisle-York nonattainment area, based upon currently available information. These counties are listed in the table below.

Harrisburg-Lebanon-Carlisle-York Area Pennsylvania	State-Recommended Nonattainment Counties	EPA Final Designated Nonattainment Counties
	Cumberland County Dauphin County Lebanon County	Cumberland County Dauphin County Lebanon County York County

The following is a brief summary of EPA's technical analysis for the Harrisburg-Lebanon-Carlisle area completed for EPA's December 22, 2008 designation notice. This summary focuses upon an evaluation of the data relating to EPA's determination that emissions from York County are contributing to monitored violations of the 2006 24-hour PM<sub>2.5</sub> NAAQS in the Harrisburg-Lebanon-Carlisle-York nonattainment area.

**Factor 1: Emissions data**

Based upon the emissions data presented in Table 1 of the EPA Technical Analysis for the Harrisburg-Lebanon-Carlisle area (EPA's Technical Analysis for Harrisburg), York County has by far the highest level of SO<sub>2</sub>, NO<sub>x</sub> and PM<sub>2.5</sub> emissions of the counties analyzed. In fact, SO<sub>2</sub> emissions in York County are more than the total SO<sub>2</sub> emissions in all of the other counties in and adjacent to the nonattainment area. This is primarily due to the emissions from the Brunner Island power station, which itself emitted over 104,000 tons of SO<sub>2</sub> and nearly 14,000 tons of NO<sub>x</sub> in 2005. The overwhelming emissions contribution of York County has a great deal to do with its contributing emission score (CES) of 100, the highest in the area of analysis. Cumberland County has the second highest CES, 16. Dauphin County has the next highest CES, 10.

**Factor 2: Air quality data**

Analysis of the speciation data presented in EPA's Technical Analysis for Harrisburg indicates that the days with the highest fine particle concentrations occur in both cool and warm seasons, with 57% of the high PM<sub>2.5</sub> days occurring in the warm season. The average chemical composition of the highest days in the warm season is typically characterized by high levels of sulfates. These data indicate that sources of SO<sub>2</sub> emissions are key contributors to exceedances in the area. Furthermore, these data provide further evidence of the contribution of SO<sub>2</sub> emissions from York County, resulting in high sulfate composition in nearby areas.

### **Factor 3: Population density and degree of urbanization**

As shown in EPA's Technical Analysis for Harrisburg, of the counties included in this analysis, York County has the second highest population and the third highest population density. York County's population and population density are higher than those of Cumberland, Dauphin, and Lebanon Counties.

### **Factor 4: Traffic and commuting patterns**

As shown in EPA's Technical Analysis for Harrisburg, it appears that the great majority of commuters travel within the confines of their own county and the number of commuters crossing into other counties with a violating monitor is relatively low. In York County, over 78% of commuter trips originate and end within the county, with fewer than 10% travelling to the violating counties of Cumberland and Dauphin Counties. Although the number of commuters traveling from York County into Cumberland and Dauphin Counties is low, other factors, including the emissions data factor, indicate that emissions from York County are contributing to violations of the 2006 24-hour PM<sub>2.5</sub> NAAQS in the nonattainment area and, therefore, it is appropriate to include York in the nonattainment area based on other factors.

### **Factor 5: Growth rates and patterns**

As shown in EPA's Technical Analysis for Harrisburg, population growth was highest in absolute terms in York County. York County experienced moderate vehicle miles traveled (VMT) growth from 1996 to 2005.

### **Factor 6: Meteorology (weather/transport patterns)**

As shown in EPA's Technical Analysis for Harrisburg, the pollution roses for Dauphin County and Cumberland County are similar. See Figures 6.1 and 6.2, below. These figures show a similar northwest-southeast prevailing wind direction on high PM<sub>2.5</sub> days in both the cold and warm season. The large southern and southeasterly components indicate influences from York County.



### **Factor 8: Jurisdictional boundaries (e.g., existing PM areas)**

As explained in EPA's Technical Analysis for Harrisburg, the Southcentral Region of Pennsylvania is home to four separate nonattainment areas under the 1997 PM<sub>2.5</sub> NAAQS: the Harrisburg-Lebanon-Carlisle, York, Lancaster, and Reading nonattainment areas. These nonattainment areas are in separate metropolitan statistical areas (MSAs), and are served by separate metropolitan planning organizations (MPOs). The Harrisburg-Carlisle metropolitan area is served by one MPO, the Tri-County Regulatory Planning Commission, which has planning responsibilities for Dauphin, Cumberland, and Perry Counties. A separate MPO is responsible for Lebanon County. The York metropolitan area is served by its own MPO.

In addition, as described in EPA's Technical Analysis for Harrisburg, Pennsylvania has defined four air basins that roughly correspond to the 1997 PM<sub>2.5</sub> nonattainment areas in Southcentral Pennsylvania: 1) Lancaster Air Basin in Lancaster County; 2) Reading Air Basin in Berks County; 3) Harrisburg Air Basin in Cumberland and Dauphin Counties; and 4) the York Air Basin in York County. These air basins are defined in *25 Pa Code* § 121.1, and designate sulfur compound controls outlined in *25 Pa Code* § 123.22. Based on jurisdictions alone, these would all be separate nonattainment areas. However, since EPA has determined that York County is no longer violating the 2006 PM<sub>2.5</sub> NAAQS and that emissions from York County contribute to violations in the area, EPA has determined that it is appropriate to include York County in the Harrisburg-Lebanon-Cumberland-York nonattainment area.

### **Factor 9: Level of control of emission sources**

As shown in EPA's Technical Analysis for Harrisburg, the three counties in the Harrisburg-Lebanon-Carlisle area contain no large stationary point sources (defined here as those emitting levels of SO<sub>2</sub> plus NO<sub>x</sub> greater than 5,000 tons per year). However, several large sources are present in the counties adjacent to the Harrisburg-Lebanon-Carlisle area. Of these sources, the most notable in terms of emissions levels is the PPL Brunner Island power station in York Haven, located in York County. This facility emitted over 106,000 tons of SO<sub>2</sub> in 2007. Under a consent agreement, two scrubbers are in the process of being constructed at Brunner Island. EPA believes that these scrubbers will handle exhaust from the plants three coal-fired boilers. The first of these scrubbers is to be completed during 2008, and the second scrubber for the remaining boiler units is projected to be completed in 2009. These scrubbers are projected to remove about 100,000 tons of SO<sub>2</sub> per year, which will have a significant impact on air quality in the surrounding area. However, since all of these controls are not yet in place, emissions from York County still contribute to violations in the area.

### **Conclusion**

EPA's technical analysis demonstrates that Cumberland, Dauphin, Lebanon, and York Counties contribute significantly to monitored violations of the 2006 24-hour PM<sub>2.5</sub> NAAQS in the Harrisburg-Lebanon-Carlisle-York nonattainment area. Historically, the Harrisburg-Lebanon-Carlisle area and the York area have been separate nonattainment areas for both particulate matter and ozone and for the 1997 PM<sub>2.5</sub> NAAQS. Additionally, EPA's previous analysis was,

in part, based upon the 2005-2007 air quality data which indicated that York County violated the 2006 24-hour PM<sub>2.5</sub> NAAQS. As a result, EPA had determined that it was appropriate to include York County in a separate nonattainment area (the York nonattainment area) for the 2006 24-hour PM<sub>2.5</sub> NAAQS. EPA reasoned that, to the extent that emissions from York County may contribute to the Harrisburg-Lebanon-Carlisle nonattainment area, that contribution will be lessened by emission controls put in place in that separate nonattainment area. However, York County is no longer violating the 2006 24-hour PM<sub>2.5</sub> NAAQS. Therefore, pursuant to the CAA, EPA does not have authority to designate York County as a separate, single-county nonattainment area. However, due to its overwhelming large emissions and weather patterns that show a direct contribution to levels of PM<sub>2.5</sub> in Cumberland and Dauphin Counties, EPA has determined that it is appropriate to include York County as part of the previously proposed Harrisburg-Lebanon-Carlisle nonattainment area. Therefore, EPA has determined that it is appropriate to include Cumberland, Dauphin, Lebanon, and York Counties in the Harrisburg-Lebanon-Carlisle-York nonattainment area for the 2006 24-hour PM<sub>2.5</sub> NAAQS.