Air Quality Conformity: A Quick Primer

Our 3 monitors post real time data. Go to [www.epa.gov/outdoor-air-quality-data](http://www.epa.gov/outdoor-air-quality-data) to see the real time data from the 3 air quality monitors in Cumberland, Dauphin, and Perry Counties. You can also download an app to see this moment’s air quality on your smart phone or tablet.

There are standards for air quality.
Readings from our air quality monitors are compared to the National Ambient Air Quality Standards (NAAQS), which are set by the U.S. Environmental Protection Agency (EPA).

**Our Top 5 Emission Sources**

<table>
<thead>
<tr>
<th>Sector Group</th>
<th>VOC</th>
<th>NOx</th>
<th>PM$_{2.5}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile</td>
<td>18%</td>
<td>71%</td>
<td>13%</td>
</tr>
<tr>
<td>Biogenics</td>
<td>56%</td>
<td>2%</td>
<td>0%</td>
</tr>
<tr>
<td>Solvent</td>
<td>17%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Fuel Comb</td>
<td>3%</td>
<td>14%</td>
<td>29%</td>
</tr>
<tr>
<td>Industrial Processes</td>
<td>1%</td>
<td>11%</td>
<td>9%</td>
</tr>
</tbody>
</table>

The EPA’s National Emissions Inventory tracks emissions by sector for every county. For Cumberland, Dauphin, and Perry Counties combined, vehicles (Mobile) contribute nearly three parts out of four (71%) of nitrogen oxide (NOx) emissions. Plants, trees, and other natural sources (Biogenics) contribute more than half (56%) of our total volatile organic compound (VOC) emissions. Fossil fuel powered plants (Fuel Comb) emit the top amount (29%) of fine particulate matter (PM$_{2.5}$).

**Emission Distribution by Sector**

The TIP/LRTP projects are assessed for their potential impact on our air quality as reported in the Mobile Sector Group, (see table above). These project forecasts are documented in the Air Quality Conformity Analysis Report for the Harrisburg MPO. Transportation Conformity is conducted for the full regional project list to ensure that federal funding and approval are awarded to transportation activities that are consistent with air quality goals. The pollutants that are analyzed include ozone and fine particulate matter, for which motor vehicle emissions budgets are established for transportation conformity purposes.

**Are we lower than NAAQS?**

The Harrisburg regional monitors have historically measured concentrations higher than both the ozone and fine particulate (PM$_{2.5}$) emission standards set by EPA. Harrisburg’s ozone exceedances occurred primarily in the early 2000s related to EPA’s 1997 ozone NAAQS. In 2007, the Harrisburg region was redesignated to a “Maintenance” area under that standard. This means the region met the standard but must continue to demonstrate and monitor activities to ensure that ozone remains at acceptable levels. In 2014, the region was redesignated under the PM$_{2.5}$ standard to a “Maintenance” area. The region remains in attainment of all other EPA ozone and fine particulate standards implemented over the last decade.

**Region attains all other air quality standards**

<table>
<thead>
<tr>
<th>County</th>
<th>NAAQS</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumberland-Dauphin-Perry</td>
<td>1997 8-hour Ozone</td>
<td>Maintenance</td>
</tr>
<tr>
<td>Cumberland-Dauphin</td>
<td>2006 24 hour PM$_{2.5}$</td>
<td>Maintenance</td>
</tr>
</tbody>
</table>

The TIP/LRTP projects are assessed for their potential impact on our air quality as reported in the Mobile Sector Group. These project forecasts are documented in the Air Quality Conformity Analysis Report for the Harrisburg MPO. Transportation Conformity is conducted for the full regional project list to ensure that federal funding and approval are awarded to transportation activities that are consistent with air quality goals. The pollutants that are analyzed include ozone and fine particulate matter, for which motor vehicle emissions budgets are established for transportation conformity purposes.

**Our Air Quality**

Our MPO plans for cleaner air.

**Better Air Quality**

Go to [www.epa.gov/outdoor-air-quality-data](http://www.epa.gov/outdoor-air-quality-data) to see the real time data from the 3 air quality monitors in Cumberland, Dauphin, and Perry Counties. You can also download an app to see this moment’s air quality on your smart phone or tablet.

**Future Air Quality**

The TIP/LRTP projects are assessed for their potential impact on our air quality as reported in the Mobile Sector Group. These project forecasts are documented in the Air Quality Conformity Analysis Report for the Harrisburg MPO. Transportation Conformity is conducted for the full regional project list to ensure that federal funding and approval are awarded to transportation activities that are consistent with air quality goals. The pollutants that are analyzed include ozone and fine particulate matter, for which motor vehicle emissions budgets are established for transportation conformity purposes.

**Air Quality Conformity: A Quick Primer**

The Harrisburg regional monitors have historically measured concentrations higher than both the ozone and fine particulate (PM$_{2.5}$) emission standards set by EPA. Harrisburg’s ozone exceedances occurred primarily in the early 2000s related to EPA’s 1997 ozone NAAQS. In 2007, the Harrisburg region was redesignated to a “Maintenance” area under that standard. This means the region met the standard but must continue to demonstrate and monitor activities to ensure that ozone remains at acceptable levels. In 2014, the region was redesignated under the PM$_{2.5}$ standard to a “Maintenance” area. The region remains in attainment of all other EPA ozone and fine particulate standards implemented over the last decade.

**Region attains all other air quality standards**

**Better Air Quality**

Go to [www.epa.gov/outdoor-air-quality-data](http://www.epa.gov/outdoor-air-quality-data) to see the real time data from the 3 air quality monitors in Cumberland, Dauphin, and Perry Counties. You can also download an app to see this moment’s air quality on your smart phone or tablet.

**Future Air Quality**

The TIP/LRTP projects are assessed for their potential impact on our air quality as reported in the Mobile Sector Group. These project forecasts are documented in the Air Quality Conformity Analysis Report for the Harrisburg MPO. Transportation Conformity is conducted for the full regional project list to ensure that federal funding and approval are awarded to transportation activities that are consistent with air quality goals. The pollutants that are analyzed include ozone and fine particulate matter, for which motor vehicle emissions budgets are established for transportation conformity purposes.

**Better Air Quality**

Go to [www.epa.gov/outdoor-air-quality-data](http://www.epa.gov/outdoor-air-quality-data) to see the real time data from the 3 air quality monitors in Cumberland, Dauphin, and Perry Counties. You can also download an app to see this moment’s air quality on your smart phone or tablet.

**Future Air Quality**

The TIP/LRTP projects are assessed for their potential impact on our air quality as reported in the Mobile Sector Group. These project forecasts are documented in the Air Quality Conformity Analysis Report for the Harrisburg MPO. Transportation Conformity is conducted for the full regional project list to ensure that federal funding and approval are awarded to transportation activities that are consistent with air quality goals. The pollutants that are analyzed include ozone and fine particulate matter, for which motor vehicle emissions budgets are established for transportation conformity purposes.
Definition of Terms

**NAAQS**
The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. Two of the common air pollutants are ozone and particulate matter.

The 2008 8-hour ozone NAAQs are met when the 3-year average of the annual fourth highest daily maximum 8-hour concentration is less than 0.075 parts per million (ppm). The 2006 24-hour PM$_{2.5}$ standards are met when the 3-year average of the annual 98th percentile of values at designated monitoring sites in an area is less than or equal to 35 µg/m$^3$.

**Ozone**
Ozone is a gas composed of three atoms of oxygen (O$_3$). Ozone occurs both in the Earth’s upper atmosphere and at ground level. Ozone can be good or bad, depending on where it is found. Breathing ozone can trigger a variety of health problems, particularly for children, the elderly, and people of all ages who have lung diseases such as asthma.

**Fine Particulate Matter**
PM stands for particulate matter (also called particle pollution): the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope. PM$_{2.5}$ refers to fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.

**VOC and NOx**
Ground level or “bad” ozone is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Emissions from industrial facilities and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are some of the major sources of NOx and VOC.

**Motor Vehicle Emission Budget**
The allocation of emissions reductions and control strategies results in an emission reduction target for all sources. For on-road mobile sources, this target can be translated into an area’s Motor Vehicle Emissions Budget (MVEB), which identifies the allowable on-road emissions levels to attain the air quality standards. These budgets are a cap on emissions and represent the “holding capacity” of the area. The MVEB is used in the transportation conformity process to cap the emissions allowed by motor vehicles on the regional transportation network as planned.

**TIP/LRTP**
Each metropolitan planning organization (MPO) is required to develop a Transportation Improvement Program (TIP)—a list of upcoming transportation projects—covering a period of at least four years. The TIP should include capital and non-capital surface transportation projects, bicycle and pedestrian facilities and other transportation enhancements, Federal Lands Highway projects, and safety projects included in the State’s Strategic Highway Safety Plan. Each MPO must also prepare a long-range transportation plan (LRTP) that provides for the development and implementation of the multimodal transportation system, including transit, highway, bicycle, pedestrian, and accessible transportation. This plan must identify how the transportation system will meet the MPO’s economic, transportation, development, and sustainability goals—among others for a 20+- year planning horizon.

For more information visit: [https://www.tcrpc-pa.org/hats/](https://www.tcrpc-pa.org/hats/)