

Executive Summary:  
Fine Particulate Matter  
Non-Attainment Area  
Recommendation to the  
Department of Ecology  
for the Tacoma Area



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This summary briefly outlines the process the Puget Sound Clean Air Agency (the Agency) undertook to develop a fine particulate matter (PM<sub>2.5</sub>) non-attainment designation area recommendation for the violating Tacoma South L monitor. The Agency submitted its recommendation, along with a report detailing rationale, to the Washington State Department of Ecology (Ecology). The entire submittal to Ecology is available upon request (in CD format, as it is 23 Mb in size). To receive the entire submittal CD, please email John Anderson at [johna@pscleanair.org](mailto:johna@pscleanair.org).

## **Background – health impacts and a stricter standard**

The US Environmental Protection Agency (EPA) is required to review its national ambient air quality standards every five years. In December 2006, EPA set a stricter daily standard for PM<sub>2.5</sub>. EPA strengthened the daily standard considerably, from a previous daily standard of 65 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) to 35  $\mu\text{g}/\text{m}^3$ . EPA based this change on the strength of evidence from various health studies that demonstrated the previous standard was not protective of human health. PM<sub>2.5</sub>, comprised of small particles less than 2.5 microns in diameter, is associated with a variety of health effects, including:

- premature death,
- increased heart attack risk,
- increased stroke risk,
- lung inflammation and stress, reduced lung function, and
- asthma-like symptoms (or triggering asthma attacks).

Recent studies, published after EPA's promulgation of the new daily standard, further confirm the link between PM<sub>2.5</sub> exposures and adverse health effects. Future revisions of PM<sub>2.5</sub> ambient air quality standards may be stricter than 35  $\mu\text{g}/\text{m}^3$ , consistent with an EPA staff recommendation of a daily standard as low as 25  $\mu\text{g}/\text{m}^3$ .

## **Concentrations at Tacoma monitor violate the current standard**

Based on the current, stricter daily standard of 35  $\mu\text{g}/\text{m}^3$ , the 7802 South L Street, Tacoma, federal reference method (FRM) monitor in the South Tacoma area (Pierce County, Washington) violates the EPA 24-hour standard for fine particulate matter (PM<sub>2.5</sub>).

While there are other monitors in the Puget Sound Clean Air Agency (Agency) jurisdiction with concentrations close to the current daily PM<sub>2.5</sub> standard, the South L Tacoma monitor is the only monitor that violates the standard based on 2004-2006 EPA reference method monitoring data. This document addresses setting a non-attainment designation area for the South L monitor.

Elevated concentrations at the South L monitor occur during the winter months, when meteorology is conducive to inversions that trap pollutants and some people are using wood to heat their homes. Continuous monitors indicate that concentrations are most elevated during evening hours, when, again, meteorology and heating activities are contributors. PM<sub>2.5</sub> speciation data from the South L monitor indicate that organic carbon is a major contributor to the overall mass of PM<sub>2.5</sub>, which also indicates wood smoke/combustion as a possible major contributor.

## **EPA criteria and non-attainment area requirements**

The Agency evaluated EPA's nine factors from EPA's June 8, 2007 memorandum to determine a designation area. EPA's nine criteria include:

1. Emissions
2. Air Quality
3. Population Density
4. Traffic and Commuting Patterns
5. Expected Growth
6. Meteorology
7. Geography/Topography
8. Jurisdictional Boundaries
9. Level of Control of Emission Sources

The Clean Air Act requires that a non-attainment area include not only the area that is violating the standard, but also nearby areas that contribute to the violation.

## **Feedback sought and received**

The Agency sought and received feedback from a variety of partners while setting a potential non-attainment boundary. The Agency has met with and received feedback from the City of Tacoma, City of Tacoma Environmental Services Commission, Port of Tacoma, Pierce County, Tacoma-Pierce County Chamber of Commerce, McChord Air Force Base and Fort Lewis. Responses to feedback received are included in the detailed report submitted to Ecology.

## **Areas prioritized for inclusion**

The Agency began with the comprehensive urban growth area (CUGA), with the majority of the contributing population and potential emission sources, as a starting point for the identification of a non-attainment and air quality planning area.

The Agency prioritized including the areas with high contributing  $PM_{2.5}$  emissions, elevated  $PM_{2.5}$  concentrations, and forecasted growth, as well as areas that are upwind of the violating South L monitor when concentrations are highest. Including these areas will ensure that a comprehensive implementation plan will successfully achieve emission reductions. These prioritized areas are described in more detail below.

- The area southeast of the violating monitor is upwind of the violating monitor when concentrations are highest. This area is forecasted for population and household growth. Census data indicate that some people in this area use wood for heat.
- The Port of Tacoma/Tideflats area is included, based on  $PM_{2.5}$  emissions, elevated  $PM_{2.5}$  concentrations, and immense forecasted growth (more than quadrupling of cargo from 1998 to 2015).
- Areas west of Interstate 5 are also included, based on elevated  $PM_{2.5}$  concentrations and

population density. Census data indicate that some people in this area use wood for heat.

## Areas excluded

As noted above, the Agency began its analysis using the nine criteria with the entire Pierce County CUGA as a starting point. Based on further analysis, the Agency determined that some portions of the CUGA did not meet the criteria for inclusion, and are recommended to be excluded from the non-attainment area. These areas include:

- Areas south and southwest of the monitor with minimal PM<sub>2.5</sub> emissions, population density, and forecasted growth (such as the DuPont area, Fort Lewis, and McChord Air Force Base--these areas are not upwind of the violating monitor when it experiences elevated PM<sub>2.5</sub> concentrations) and
- The far eastern peninsula of the CUGA, east of the Puyallup River and White River valley (such as the Bonney Lake, Orting, Sumner, and Auburn areas--while these areas do likely have PM<sub>2.5</sub> emissions, and potentially elevated PM<sub>2.5</sub> concentrations, the topography and meteorology make it unlikely that these contribute to the violating South L monitor).

## Proposed area

Figure 1 shows the Agency's proposed non-attainment area outlined in red. The proposed area includes the CUGA (hatched in orange), and excludes areas described above. The Agency's proposed non-attainment area includes the "holes" in the CUGA, so that emission reduction planning can be as consistent as possible for the entire contiguous non-attainment area.

The Agency acknowledges that Puyallup Tribal lands are within the recommended boundary, and EPA and the Tribe will be addressing these areas. The Agency will partner with EPA and the Puyallup Tribe as needed and desired.

Cities within the CUGA and also within the proposed non-attainment boundary include: Tacoma, Lakewood, Steilacoom, Fircrest, University Place, Ruston, Milton, Edgewood, Puyallup, and Fife.

The Agency's strategies for PM<sub>2.5</sub> emissions reductions are not and will not be limited to the non-attainment area.

## Non-attainment next steps and opportunities for input

The Washington State Department of Ecology will be seeking input on proposed boundaries through December 10, 2007 in a formal public comment process. Additionally, Ecology will hold a Public Hearing on December 5, 2007 at 7 pm at the Pierce County Library and Administrative Center (PAC Building – at 3005 112<sup>th</sup> Street East, Tacoma, WA, 98446). For more information contact, contact Doug Schneider at [dsch461@ecy.wa.gov](mailto:dsch461@ecy.wa.gov).

Ecology will submit its recommendation to the Governor in December, and the Governor is required to submit a recommendation to EPA by December 18<sup>th</sup>, 2007. EPA will designate the proposed and approved area as non-attainment on December 18<sup>th</sup>, 2008.

Figure 1:

### Proposed Boundary for Tacoma Non-Attainment Area

