

REPORT TO THE LEGISLATURE



PROGRESS IN REDUCING FINE PARTICLE AIR POLLUTION IN TACOMA-PIERCE COUNTY

Executive Summary

This report outlines the approach and tools implemented in Tacoma and Pierce County to reduce wood smoke and continue to meet (stay in attainment with) the 24-hour fine particle (PM_{2.5}) National Ambient Air Quality Standard (NAAQS). Ecology and Puget Sound Clean Air Agency developed this report to satisfy a requirement in RCW 70.94.605.

RCW 70.94.605 Report to the legislature — Achieving attainment for areas of nonattainment. (Expires January 1, 2019.)

“(1) The department of ecology and local air pollution control authorities shall report back to the appropriate standing committees of the legislature by December 31, 2014, and every two years thereafter, on progress toward achieving attainment for areas of nonattainment that the revised burn ban and prohibition requirements contained in RCW 70.94.473 and 70.94.477 were enacted to address, as well as whether other implementation tools are necessary to achieve attainment.”

All of Washington currently meets the health-based NAAQS. That wasn't the case, however, in 2009, when EPA designated the Tacoma-Pierce County area as not meeting (nonattainment with) the 2006 NAAQS for 24-hour PM_{2.5} pollution. The primary cause of poor air quality was wood smoke from home heating during winter evenings with cold temperatures and low wind speeds.

By 2015, the Tacoma-Pierce County area met the 24-hour PM_{2.5} NAAQS because of significant efforts to reduce wood smoke. Puget Sound Clean Air Agency, working closely with a task force and the community:

- Revised burn ban thresholds and increased burn ban compliance and enforcement.
- Raised awareness about burn bans using text messages, emails, media notifications, and the airsafepiercecounty.org website.
- Made it illegal to use an uncertified wood stove.
- Provided incentives and replaced about 5,000 uncertified wood stoves with cleaner heating options (since 2012).

To continue meeting the PM_{2.5} NAAQS, the Tacoma-Pierce County area does not need implementation tools beyond those authorized in RCW 70.94.473 and 70.94.477. Although the air is cleaner, PM_{2.5} pollution remains a health concern. Researchers continue to find serious health effects at levels lower than the current NAAQS. If EPA adopts a more protective 24-hour PM_{2.5} NAAQS in the future, new strategies may be needed in the Tacoma-Pierce County area.

Background

In 2012, the Legislature revised requirements in RCW 70.94.473 and 70.94.477 to protect air quality in areas highly impacted by wood smoke from home heating devices.¹ The statutory changes allow for more protective burn ban thresholds for areas not meeting or at risk of not meeting the NAAQS. The revisions also allow Ecology and local air agencies to ban the use of uncertified wood stoves in areas that do not meet the NAAQS.

RCW 70.94.605 requires Ecology and local clean air agencies to report to the Legislature by Dec. 31, 2014, and every two years until the provision expires on January 1, 2019, about:

- Progress toward meeting the NAAQS in areas using the more protective burn ban thresholds and the ban on uncertified wood stoves.
- Other implementation tools necessary to meet the NAAQS.

In 2012, the only area that did not meet the NAAQS was the Tacoma-Pierce County area shown in Figure 1. EPA classified this location as a nonattainment area (not meeting the NAAQS) for 24-hour fine particle ($PM_{2.5}$) pollution in 2009. The primary cause of poor air quality was wood smoke from home heating during winter evenings with cold temperatures and low wind speeds.



Figure 1: Map of Fine Particle Maintenance Area in Tacoma and Pierce County

¹ Substitute House Bill 2326, Chapter 219, Laws of 2012.

Fine particle pollution is linked to many harmful health effects, including:

- Worsening asthma and chronic bronchitis symptoms.
- Increased heart attacks.
- Stroke.
- Premature death.²

The consequences of not meeting the NAAQS for Tacoma-Pierce County included:

- Increased exposure of citizens to high levels of air pollution and related harmful health effects.
- Increased pollution control requirements for industry, making the area less attractive to new businesses.
- Increased costs to clean up the pollution and prevent harmful levels of pollution in the future.
- Decreased reputation as the only community in the state that didn't meet the NAAQS.

Puget Sound Clean Air Agency worked with residents to clean up the air. With these efforts, the Tacoma-Pierce County area met the 24-hour PM_{2.5} NAAQS in 2015. The area continues to meet the NAAQS and is following the first of two required 10-year maintenance plans to keep the air clean.³

Strategies to Continue Meeting the PM_{2.5} NAAQS

Tacoma-Pierce County area residents are applying the tools in RCW 70.94.473 and 70.94.477, which has resulted in cleaner air. These tools allow Puget Sound Clean Air Agency to call burn bans at levels more protective than the PM_{2.5} NAAQS in the Tacoma-Pierce County area. E-mail and text message notifications raised awareness of burn bans and compliance increased.

Puget Sound Clean Air Agency also enhanced enforcement of air quality burn bans, which increased compliance with the bans. Analysis shows that less than 10 percent of people ticketed re-violate during later bans. Residents whose wood stove is their only adequate source of heat may get an exemption from burn bans and may continue to use an uncertified wood stove.

The tools authorized by the Legislature also allowed Puget Sound Clean Air Agency to issue a rule to make it illegal to use an uncertified wood stove in the Tacoma-Pierce County area. Starting in October 1, 2015, any wood stove that is not certified must be removed and recycled, or made unusable, unless the resident has no other adequate source of heat. Certified wood stoves must meet Washington certification standards, including limits on the amount of PM_{2.5} coming from the device during testing.

Many residents used the incentive programs to replace uncertified wood stoves with cleaner heating options. Since 2012, about 5,000 Tacoma-Pierce County residents have removed uncertified wood stoves. Low-income participants got a more efficient heating system for free. Other participants got a portion of the costs of a more efficient heating device. Partial funding for

² Environmental Protection Agency, Health and Environmental Effects of Particulate Matter (PM), <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm> (accessed 8/31/2018).

³ Washington Department of Ecology, Proposed State Implementation Plan Revision: Tacoma-Pierce County PM_{2.5} Redesignation Request and Maintenance Plan, October 2014, Publication 14-02-021.

these programs came from Ecology’s Wood Smoke Reduction Grants which are funded by the capital budget project, “Reducing Toxic Wood Stove Emissions.”

Puget Sound Clean Air Agency’s outreach and education campaigns, including the airsafepiercecounty.org website, continue to promote enhanced burn ban enforcement and the rule to remove uncertified wood stoves.

Figure 2 shows how PM_{2.5} pollution levels at Tacoma’s South “L” Street monitoring site have improved since 2009, when levels were above the 24-hour PM_{2.5} NAAQS.

The 24-hour PM_{2.5} NAAQS is **35 micrograms per cubic meter** ($\mu\text{g}/\text{m}^3$), measured as the three year rolling average of the annual 98th percentiles.

The dashed black line shows the 24-hour PM_{2.5} NAAQS. The blue diamonds show 98th percentile levels for individual years. The red line shows the three-year rolling average of the annual 98th percentiles, which is used to determine if the area meets the NAAQS.

Fine Particle Levels in Tacoma and Federal Daily Standard

(Daily PM_{2.5} [1-year 98th percentile] and Design Value [3-year mean of Daily])

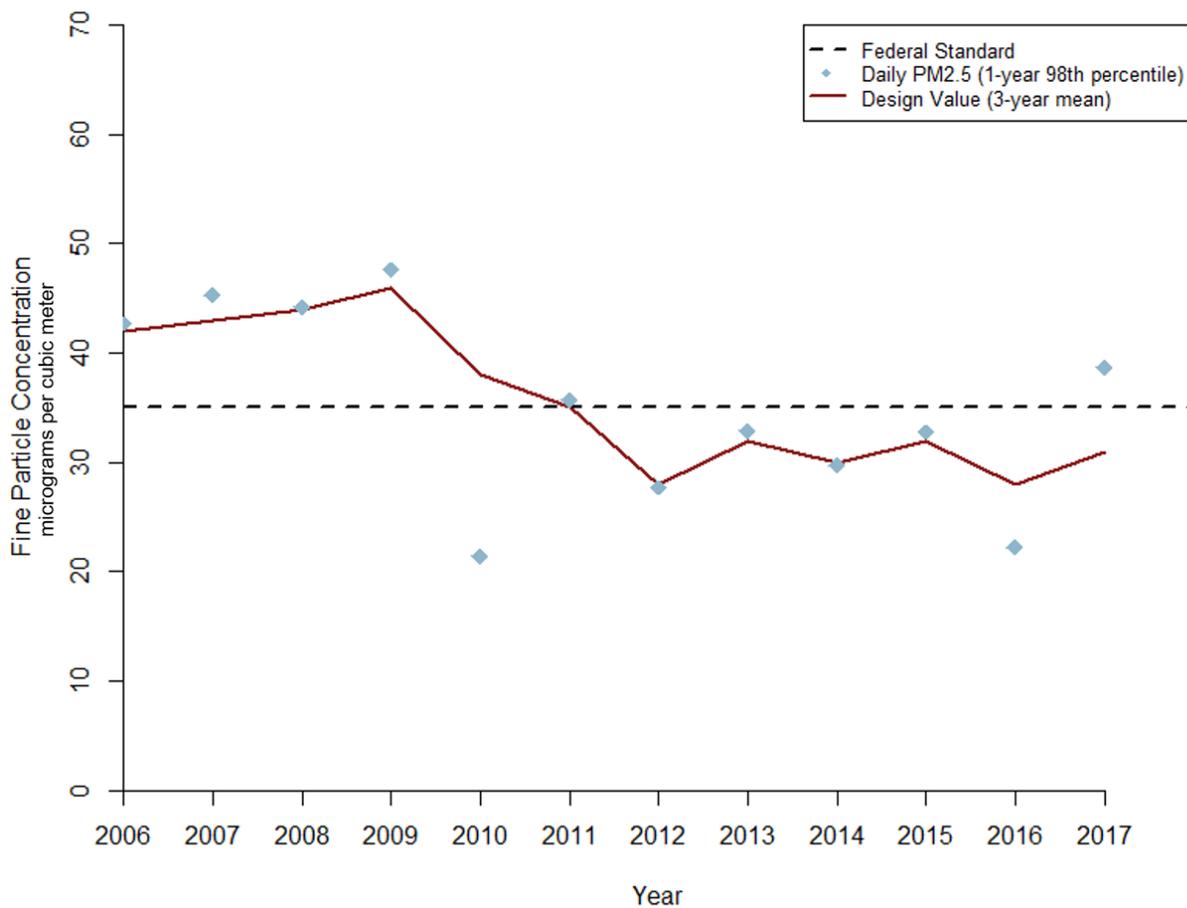


Figure 2: Fine Particle Levels at the Tacoma South “L” Street Monitoring Site.

While 2017 shows a jump in PM_{2.5} pollution levels, wildfire smoke is mostly responsible. EPA may allow wildfires to be called an “exceptional event.” An exceptional event is an unusual or naturally-occurring event that can affect air quality, but cannot be reasonably controlled. If wildfires cause PM_{2.5} monitor readings to go over the NAAQS, Ecology and Puget Sound Clean Air Agency may request that EPA exclude the monitoring data from calculations used to determine whether the region meets the NAAQS.

As needed, Ecology and the Puget Sound Clean Air Agency will work together with EPA to address wildfire smoke days under EPA’s “exceptional events” policy. This will help make sure that high PM_{2.5} pollution days from wildfire smoke do not threaten the area’s attainment status.

Recommendations

We have made great progress. The revised burn ban requirements and the ban on the use of uncertified wood stoves authorized by the Legislature, and included in the EPA-approved maintenance plan, are critical tools to help the area stay in attainment with the NAAQS. Puget Sound Clean Air Agency’s rule requiring the removal of uncertified wood stoves is still needed to offset future emissions from long-term growth in the area. These tools helped bring the area back into compliance with the PM_{2.5} NAAQS. At this time, the Tacoma-Pierce County area does not need implementation tools beyond those authorized in RCW 70.94.473 and 70.94.477.

Conclusion

As outlined in the maintenance plan, Ecology and the Puget Sound Clean Air Agency will continue to implement the tools authorized by the Legislature. We will also continue to monitor PM_{2.5} levels to verify that the area continues to meet the NAAQS. The maintenance plan includes requirements for the agencies to adopt and implement additional measures if a violation of the 24-hour PM_{2.5} NAAQS occurs.

Although the air is cleaner, PM_{2.5} pollution remains a health concern. Researchers continue to find serious health effects at levels lower than the current NAAQS. EPA reviews the NAAQS every five years. If EPA adopts a more protective 24-hour PM_{2.5} NAAQS in the future, new strategies may be needed in the Tacoma-Pierce County area.

Publication information

This report is available on the Department of Ecology's website at <https://fortress.wa.gov/ecy/publications/SummaryPages/1902009.html>

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