



Tacoma-Pierce County Clean Air Task Force

Report and Recommendations to
Puget Sound Clean Air Agency

Executive Summary

December 2011

www.CleanAirPierceCounty.org

Tacoma–Pierce County Clean Air Task Force Final Report – Executive Summary

The following provides a summary of the Tacoma–Pierce County Clean Air Task Force final report. The task force was created in early 2011 to help the Puget Sound Clean Air Agency (Clean Air Agency) address a local fall and winter air quality problem. The task force was asked to recommend community-based solutions to help the area meet federal air quality standards for fine particles. The Task Force learned that much of the typical pollution sources, such as industry and vehicles, are already operating under pollution control rules or are adopting tighter controls, and that about one-third of the needed pollution reductions will come from those sources.

With wood smoke making up 50 percent of the particle pollution, the Task Force recommended two key solutions to reduce those emissions. One solution focuses on reducing spikes of pollution during weather inversions. The other focuses on reducing pollution from older more polluting uncertified wood burning devices. The task force recognized that the problem will not be solved by addressing only wood smoke, but it cannot be solved if wood smoke is not addressed.

Type of Pollution and Area of Concern

In 2009, the U.S. Environmental Protection Agency (EPA) classified parts of Tacoma and Pierce County as a “nonattainment area” for fine particle pollution (or PM_{2.5}) under the federal Clean Air Act. During certain times of the fall and winter, the area does not meet the federal health standard for the maximum level of this pollutant allowed in a 24-hour period. Fine particle pollution comes mainly from combustion (burning) of fuels. Sources include wood smoke (from wood stoves, fireplaces, and burning of yard waste and land clearing), exhaust from motors (from cars, trucks, buses, ships, etc.), and industrial operations.

The levels of pollution are documented by one of the Clean Air Agency’s air monitoring stations, which is located in the South End of Tacoma at South L Street. While not as high as the South End monitor, fine particle pollution levels are also elevated at other Pierce County monitoring sites. The violations occur in the late fall and winter months, usually on days of meteorological “inversion,” when a layer of cold air is trapped close to ground level, and pollutant levels build up rapidly.

Pollution Sources

More than half (53 percent) of the fine particle pollution measured at the Tacoma South L Street monitor during the fall and wintertime is from wood smoke, with another 25 percent from diesel and gasoline vehicles. Other fine particle pollution sources in fall and winter months are: industrial (10 percent), sea salt (5 percent), ships (4 percent), dust (2 percent), and fireworks (1 percent). Of the 53 percent of fine particle pollution from wood smoke, uncertified wood stoves are estimated to contribute just over half of this pollution, with certified wood stoves contributing more than a quarter, fireplaces a little less than a quarter and pellet stoves less than 1 percent. The highest pollution levels occur at night and early in the morning when more people are home and using their wood stoves and fireplaces.

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Implications of Nonattainment

Not attaining federal air quality standards impacts health and potentially impacts regional economic development. The fine particle pollution in the air poses a serious health risk to people who live and work in the nonattainment area. Fine particles can easily enter the lungs and travel into the circulatory system, affecting the heart and lungs. All residents are affected, although children, older adults, and people with respiratory and cardiac illnesses are especially at risk.

Effects on economic development include stricter requirements on large industries seeking to expand and on new large businesses interested in moving to the area. Some large businesses could be required to install additional emission control equipment, which would be costly. Tourism can also be affected by the perception that the area has “dirty” air.

There are also consequences for failing to act. If the state does not create a plan for improving air quality that is approved by the EPA, the Clean Air Act requires EPA to impose its own plan on the area. Their plan would not necessarily clean up the problem in the way the local community might prefer. Not acting also would endanger federal transportation funding for the region, and grant funding for air quality monitoring, planning, and control programs.

To respond to the nonattainment designation and to show how the area will achieve cleaner air, the state Department of Ecology (Ecology) must develop a State Implementation Plan (SIP) and submit it to the EPA for approval by December 2012. The area is required to get into attainment by the end of 2014 but can seek a series of extensions if it can show substantial progress in reducing pollution. (All communities must be in attainment by 2019.)

Scale of the Challenge

The fine particle levels at the Tacoma South L Street (violating) monitor need to drop by at least 9 micrograms per cubic meter on peak fall/winter days, from an average of 42.5 to between 32 and 34 micrograms per cubic meter (a little over 20 percent), in order to reach attainment.

Clean Air Task Force and Its Work to Develop Recommended Solutions

The Clean Air Task Force was asked to identify, evaluate and recommend community-based solutions to bring the area back into compliance with federal air quality standards. The 22 members were community leaders, elected officials and residents (see list on page ii). The task force met a total of 11 times between May and December 2011. After developing an understanding of the air quality issues and requirements of the nonattainment designation, the task force worked to identify possible solutions to reduce fine particle pollution in the nonattainment area and to assess which solutions would be the best fit for the community and region. The task force also learned about the solutions that other cities and counties across the country are using to reduce fine particle pollution. To evaluate the possible solutions, the task force used criteria the federal Clean Air Act requires and developed additional criteria to reflect the community’s values and interests.

The task force brainstormed potential solutions, producing a list of more than 60 possibilities. The Clean Air Agency staff reviewed the solutions for their potential to reduce the level of fine particle pollution in

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the area, and grouped them into four categories: (1) major reduction potential solutions (to reduce fine particle pollution by 0.5 micrograms per cubic meter or more); (2) supplemental solutions (which would not achieve much reduction alone but could boost the impact of one or more major solutions); (3) low reduction potential solutions; and (4) public education and outreach.

Because wood smoke accounts for more than half of the fine particle pollution in the fall and winter months, the solutions focused mainly on wood smoke. Reductions in pollution are also needed from the other sources of fine particle pollution (vehicles, ships, etc.).

Evaluation of potential solutions. The evaluation process yielded four solution packages that could produce adequate reductions in fine particle pollution in the nonattainment area: (1) removal or decommissioning of uncertified wood stoves and inserts at the time a home is sold; (2) enhanced burn ban enforcement; (3) removal of uncertified wood stoves and inserts at “date certain” in a future year; and (4) reductions from non-wood smoke sources, such as gas and diesel engines, ships and industry. The task force and agency staff reviewed each in detail. The task force used several steps to review, discuss, and evaluate each of the potential solutions, including: a presentation by agency staff on each proposed solution; review and discussion of the key assumptions about how solutions would be implemented and the results of technical modeling; review and discussion of the staff’s assessment of the evaluation criteria they were asked to rate; the task force’s assessment of evaluation criteria related to community values and impacts; additional review and discussion after the staff revised each solution based on the evaluations; and development of recommendations.

The agency staff and task force worked together to further develop the elements of three of the four solutions: enhanced burn ban enforcement, date certain removal, and reductions from non-wood smoke sources. The task force decided not to move forward with the time of sale removal or decommissioning of uncertified wood stoves/inserts solution because of several concerns (described in this report).

Public Outreach and Input

The task force allowed for public comment at each of its meetings. In addition, the Clean Air Agency conducted significant public outreach in Pierce County on fine particle nonattainment. There were two primary purposes: to raise general awareness and to gather public input on the draft solutions the task force was considering. Because of the likely impacts from future implementation of wood smoke reduction programs, special emphasis was given to reaching members of the community who burn wood for heat. Public outreach was conducted throughout the task force process, but was ramped up during October and November 2011. Activities included: mailing a post card to all 220,000 households in the non-attainment area; two public open houses with a total of 200 people attending; an online survey; a direct mailing; print and online advertising; and outreach throughout the year to approximately 30 community groups. As a result of these efforts, the Agency received more than 600 comments.

Overall, the majority of respondents indicated full or qualified support for the proposed solutions while expressing concerns about the possible impacts on some community members. Four major themes emerged: (1) strong concerns about the economic impacts of the potential solutions, particularly for

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low- and fixed -income families; (2) a large proportion of people expressed concerns about the impacts of wood smoke on their health and in their neighborhoods; (3) a smaller number expressed disbelief that wood smoke is a significant source of pollution; and (4) a small number expressed concern that efforts to address wood smoke are intrusive and a waste of taxpayer money.

Recommended Solutions and Principle Statements

No single solution would enable the nonattainment area to reduce fine particle pollution sufficiently to achieve the federal air quality standard. The task force is recommending a combination of strategies to improve air quality in a timely manner and to help the area reach attainment. The three main strategies recommended by the task force are:

1. Enhanced enforcement of burn bans
2. Establishment of a date certain for removal of uncertified wood stoves and inserts
3. Implementation of the range of strategies to reduce fine particle pollution for gasoline vehicles, diesel vehicles, industries and ships.

The Clean Air Act allows education and voluntary measures to account for only up to 6 percent of the total emission reduction needed to achieve attainment because these measures are not considered enforceable and are difficult to measure. However, the task force firmly believes that the recommended solutions will not be successful without considerable public education, community outreach, and public involvement. Local communities must first understand the nature of the problem and then take ownership of the actions needed to improve air quality. Education and outreach are needed to help residents understand the causes and impacts of fine particle pollution, to encourage residents to take informed actions, and to overcome the skepticism many members of the public may have about why these steps are needed. Outreach and education must include efforts to reach individuals who may not receive information from traditional civic or community organizations.

The task force also expressed concern that the solutions being recommended could create an economic burden on residents in the nonattainment area. As a result, they are proposing that the solutions be implemented in a manner that will provide assistance to low-income residents.

The following provides several overarching principles the task force wants to see used in implementing the solutions described below.

Overarching Principle Statement

- All residents and communities in the nonattainment area should contribute to the solution. We are all in this together.

Common Principles for Implementing All Solutions

- Education efforts are a key component to ensure effective implementation.
- Outreach should be broad-based and include groups that are less likely to receive notice or support.
- Individual strategies should be consistent and complement other strategies.

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The task force recommendations regarding reduction of wood smoke pollution include a combination of suggested program design features and statements of principle to guide the future implementation of these solutions.

Recommended Solution 1: Enhanced Burn Ban Enforcement

Goal: Ensure that those who are contributing the most to the fine particle pollution during periods of the poorest air quality reduce their emissions. The task force felt that this potential solution would be effective because it would focus action during the days of the year when fine particle pollution in the nonattainment area exceeds the federal 24-hour air quality standard. The solution also builds on an existing regulation (issuance and enforcement of burn bans) that is familiar to many residents.

Proposed Key Features of Enhanced Burn Ban Enforcement: The task force is recommending a number of changes to the way in which burn bans are currently called and enforced in the nonattainment area. The changes include the following: revise the emission thresholds for calling burn bans; increase enforcement presence during burn bans; enforce violations based on visible emissions (in addition to smoke density); add more evening enforcement, as practical; maintain a two-stage burn ban; provide exemptions and/or assistance to low-income residents and households for whom wood burning is their only adequate source of heat; create a registration program for wood burning devices to make the program more effective; and expand outreach and education efforts.

Statements of Principle to Guide Implementation of Enhanced Burn Ban Enforcement:

- Enhanced enforcement should be combined with a robust community outreach initiative to enable neighbors to talk with neighbors about the importance of obeying burn bans and burning cleanly when the community is not in a burn ban.
- Assistance should be provided for low-income households who may be affected by this requirement. Enforcement of burn bans should respect the challenges faced by low-income burners and provide alternatives (e.g., financial assistance or exemptions), even if these residents have other sources of heat available.
- Enhanced enforcement should be phased in to allow those who receive a first notice of violation to reduce or eliminate the initial fine if they engage in educational opportunities about proper burning practices and the importance of burn bans, or move to a cleaner source of heat. The initial fine should be meaningful enough to provide sufficient incentive to participate in education activities and to discourage subsequent burning during burn bans.
- Enhanced enforcement should continue to accommodate households for whom a wood burning device is their only adequate source of heat, while ensuring that the exemption is used only for those who qualify. Exemptions from burn ban enforcement do not exempt people from burning cleanly nor from other standards.
- Decisions about who provides enforcement should be based first on who would be most effective, while respecting the need to consider any capacity challenges of local governments.
- When implementing a registration program, consider that the goal is to enhance effectiveness of enforcement staff and minimize unnecessary interactions with exempted households.

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- Revisions to the Stage 1 and/or Stage 2 “trigger” levels (when burn bans are called) should be considered, as they may enable burn bans to more effectively keep fine particle pollution below the federal daily standard during inversions, and better protect public health.
- Both forecast and monitored data should be utilized to call burn bans (as they are both currently used).

Based on the program design features described above, it is estimated that enhanced enforcement of burn bans could achieve a reduction in fine particle pollution of about 1.4 micrograms per cubic meter by 2014 (nearly 20 percent of the minimum reduction needed); and a reduction of 6.8 micrograms per cubic meter by 2019 (approximately 70 percent of the minimum reduction needed).

Recommended Solution 2: Date Certain Removal of Uncertified Wood Stoves and Inserts

Goal: Removal of the older, more polluting wood stoves and inserts from the nonattainment area. Wood stoves and inserts manufactured prior to 1988 produce more pollution and are less efficient than more modern devices. The older stoves and inserts made prior to 1988 are called uncertified devices. Since wood burning devices can last for 40 years, there are still a considerable number of older uncertified wood stoves and inserts in use. The task force felt that establishing one clear date when all residents will need to remove their uncertified wood stove or insert would be effective in reducing fine particle pollution in the long run.

Proposed Key Features of Date Certain Removal: The task force is recommending that all uncertified wood stoves and inserts be removed by the end of August 2015; that a combination of incentives, fines, education and regulations be used to encourage residents to remove uncertified devices; that a registration system be created for owners of wood burning devices; and that a “medium” level of confirmation be created to confirm removal of uncertified devices (e.g. including higher fines for using an uncertified device during a burn ban, or technology like GPS-marked photos to confirm removal). The goal on confirmation is to achieve enough emission reductions in a way that creates the minimal amount of intrusion in homes as possible.

Statements of Principle to Guide Implementation of Date Certain Removal of Uncertified Wood Stoves and Inserts:

- Households should have a range of options if they choose to replace their uncertified device (including certified device, pellet stove, or other type of heat), but incentives could vary depending on the device they use.
- Assistance should be provided for low-income households who may be affected by this requirement. The assistance could take several forms, including, but not limited to, financial assistance for installing a new heating device, home weatherization, and/or providing additional time for low-income households to meet this requirement.
- The solution should accommodate households for whom a wood burning device is their only adequate source of heat.
- Date certain removal should allow time for transitions, yet begin soon enough that the date is meaningful. Timing of implementation should be equitable, be publically acceptable, and allow time to find funding.

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- A medium level of confirmation is the preference. But if that is not sufficient to achieve EPA approval or program effectiveness, a more active form of confirmation should be used. If more rigorous methods of confirmation are needed, they should be equitable and as nonintrusive as possible.
- The purpose of the registration program is to confirm widespread removal of uncertified devices.
- Recognizing the current challenges in local, state, and federal budgets, funds should be prioritized according to the task force’s ranking, where possible. The task force provided the following rankings for use of resources: 1st assistance to low-income households; 2nd assistance to households with no other adequate source of heat; 3rd incentive payments for early adopters; and tied for 4th incentive payments of cleaner heat and assistance to all households for removal of stoves/inserts.

It is estimated that date certain removal of uncertified wood burning stoves and inserts could achieve a reduction in fine particle pollution of about 0.7 micrograms per cubic meter by 2014 (less than 10 percent of the minimum reduction needed); and a reduction of 2.5 micrograms per cubic meter by 2019 (more than 25 percent of the minimum reduction needed).

The task force concluded that this solution would improve air quality over time and address one of the underlying causes of fine particle pollution. The task force expressed concern about the level of public and political acceptance of this solution, acknowledging that there are some in the community who will be opposed to limitations on their options for heating their home, or who object to the potential cost to replace the uncertified device with another stove, insert or other heating device. At the same time, the group recognized that this solution is needed to get to attainment.

Recommended Solution 3: Other Pollution Sources

Approximately one-quarter to one-third of the emission reductions needed to meet the fine particle pollution standard by 2019 will be accomplished from new federal regulations and local initiatives related to non-wood smoke sources of pollution (vehicles, ships, etc.). Most of these regulations and initiatives are in the process of being implemented.

Nationally, the focus for reducing fine particle pollution related to gasoline vehicles has been on creating cleaner standards for both engines and fuels. The State of Washington has adopted the California Clean Car Standards for vehicles, the most stringent automobile standards in the country. These standards will help to reduce fine particle pollution. Local governments have adopted several programs to reduce fine particle pollution related to gasoline engines, including installing electric vehicle charging stations, using electric and biodiesel vehicles, and adopting anti-idling programs. The regional transportation plan adopted by the Puget Sound Regional Council has several policy goals that will help reduce fine particle pollution even further. A number of planned transportation capital investments will also help, such as high occupancy vehicle (HOV) lane extensions, ramp metering, Sound Transit Sounder rail improvements, and investments in alternative means of travel. In addition, the task force suggested continued education efforts that encourage individual car and truck owners to take actions to reduce pollution emissions (e.g. anti-idling initiatives).

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New federal standards for diesel engines and fuel also will help to reduce emissions. In addition, several local jurisdictions have adopted programs to reduce emissions from diesel engines and equipment.

Among the industrial sources of fine particle pollution in the nonattainment area, there are six that have been identified by Ecology and the Clean Air Agency as the largest industrial emitters of fine particle pollution. Collectively, these six sources contribute more than 90 percent of the industrial fine particle pollution from industrial sources in the nonattainment area. The federal Clean Air Act establishes a requirement for working with industries to reduce their levels of pollution called Reasonably Available Control Technology (RACT). Engineering staff at Ecology and the Clean Air Agency are reviewing the existing pollution controls and operations at these six industrial sources to determine if they already meet RACT. A preliminary analysis indicates that most, if not all, of the sources do.

For ocean-going ships, new international standards require use of lower sulfur fuel, beginning in 2012 and moving to much stricter levels by 2015. These cleaner fuels will reduce the fine particle pollution from ships. The Port of Tacoma and its tenant, Totem Ocean Trailer Express (TOTE), have also installed shore power facilities and retrofitted ships so that ships can use shore power instead of operating diesel engines to create power when at berth.

Together the anticipated reductions from emission sources other than wood smoke are estimated to achieve approximately one-quarter to one-third of the reductions needed (2 to 3 micrograms) to reach the federal 24-hour air quality standard by 2019. Most of the emission reductions from these other sources of fine particle pollution will come from changes in federal standards for more efficient engines and cleaner fuels. Continued efforts to reduce emissions from these sources will contribute to the overall plan to achieve attainment.

Making Progress Toward Clean Air

The task force was mindful of the need to meet the federal Clean Air standard, but also to reduce overall levels of pollution in the nonattainment area. Since high levels of fine particle pollution have been demonstrated to have impacts on human health, the task force wanted the recommendations to first and foremost, meet the federal standard. While acknowledging that the Clean Air Agency board of directors previously set a more aggressive regional health goal for the area, the Task Force chose to focus solutions on reaching the federal standard of attainment. The combined effects of the proposed solutions suggest that attainment could potentially be achieved by 2017 assuming the programs were fully supported over the time frame. By 2019, it is estimated that the nonattainment area would achieve fine particle pollution reductions over the federal 24-hour standard, leaving room should reductions not occur as rapidly as projected or should the standard be lowered (it is up for review in 2012).

Contingency Measures

The State Implementation Plan submitted by Ecology to EPA must identify not only the solutions the nonattainment area will use to meet the air quality standards, but also potential additional measures in case the area is not making sufficient progress toward its target date. These additional solutions are called contingency measures. The task force is recommending that the following contingency measures be considered for inclusion in the Plan:

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- That cleaner technologies be required for use of fireplaces, such as cost-effective catalysts, starters, or filter technology that has been shown to work (this technology has not yet been demonstrated successfully).
- A requirement that in the nonattainment area only the cleanest burning devices (equivalent to emissions produced by a pellet stove) be allowed. (The task force acknowledged that because the EPA is currently revising its emission testing protocol for stoves, this measure may not be available at the time the SIP is submitted, but could be added at a later date.)
- That the time of sale of a home be used as an opportunity to confirm the removal of uncertified wood stoves or inserts (in addition to the “date certain” removal of uncertified devices).
- For households that have an uncertified wood stove or insert as their only adequate source of heat, only those that are income qualified would receive assistance or be exempted from the requirement to remove their device.

Task Force Consensus on Recommendations

The task force reached consensus on the recommendations with one exception. This exception was on the recommendation that a system of registration be created for all wood stove and insert owners in the nonattainment area. Three members did not support the recommendation for the registration system, because of concerns about the level of response to a voluntary program, about resentment that it might create, about possible confusion as to whether a stove is certified or uncertified and about what registration means, and about whether the program might become more regulatory over time.

Next Steps

With this report the task force is transmitting its recommendations to the Puget Sound Clean Air Agency. The Agency’s board of directors will review the report and make recommendations to the State Department of Ecology. Ecology will conduct further analysis and prepare a State Implementation Plan (SIP). There will be opportunities for public review and comment on the Plan. Because any local rules or state laws required for the solutions will need to be in place before the SIP is submitted to the EPA, the Clean Air Agency will seek state legislation in 2012 to clarify its existing authority for implementing the recommended solutions.

Ecology must submit the SIP to the EPA by December 2012 for their review and approval. At the same time, the Clean Air Agency will be developing plans and implementing actions to improve air quality in the nonattainment area.