



Working Together for Clean Air

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Diesel Health Impacts: Why worry?

**Diesel
Solutions**
Cleaner air for tomorrow, today

David S. Kircher

**MOVING DOWN THE ROAD TO CLEANER AIR:
Diesel Emissions Reductions Funding Forum
March 27, 2006**

Presentation Outline



- Overview: The impact of diesel on regional emissions and air quality



- Health Impacts

- What's being done to address diesel both today and tomorrow



- The proposed new Federal PM2.5 standard

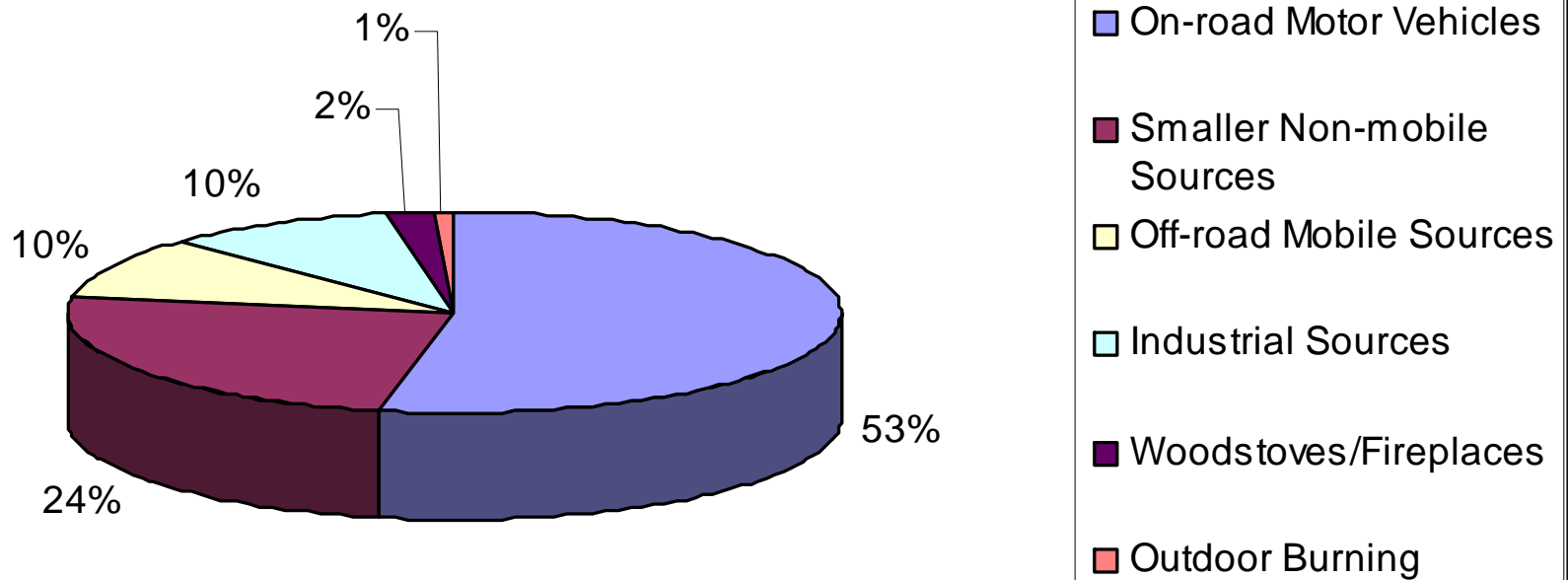
- Summary



Puget Sound Emission Sources



Puget Sound Annual Air Emissions*

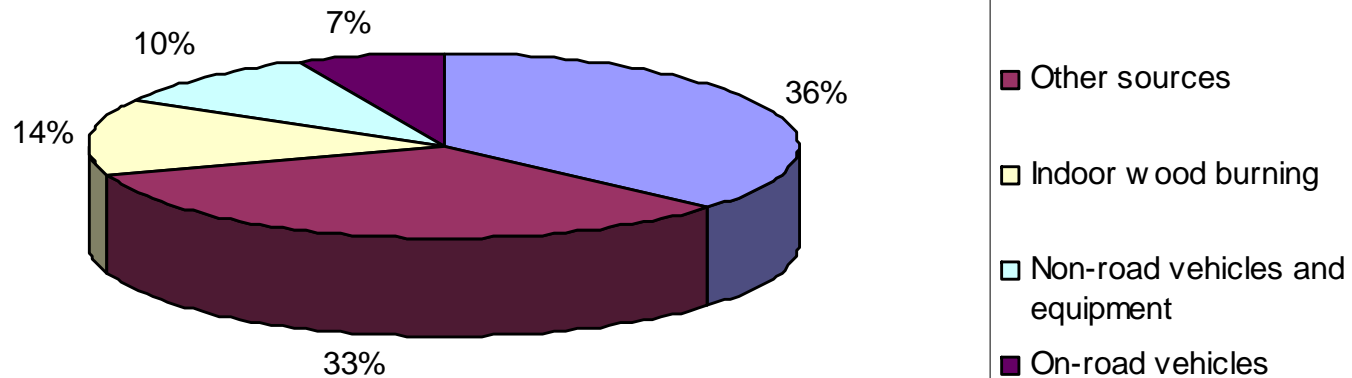


*Composite of volatile organic compounds, fine particulates, sulfur dioxide, nitrogen oxides and carbon dioxide

PM in Puget Sound Region



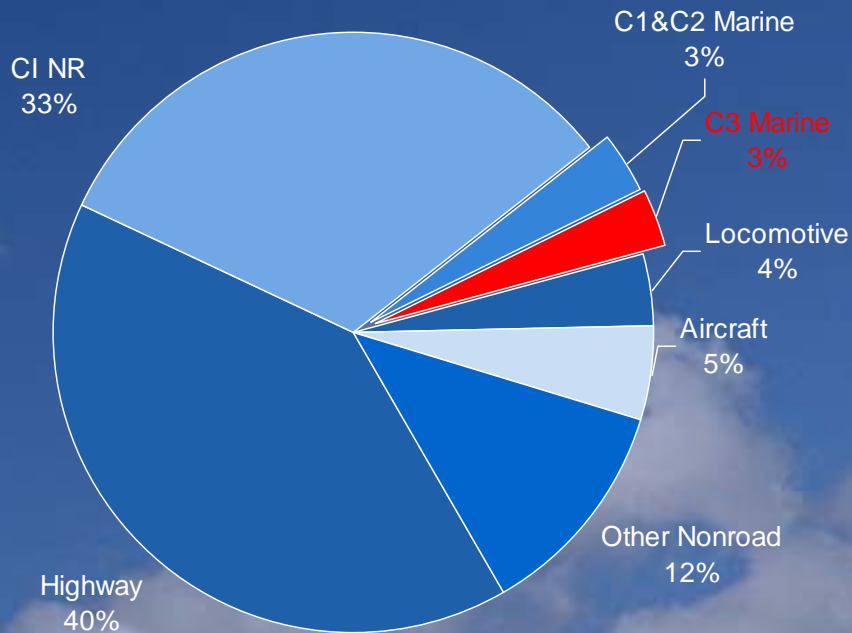
Sources of Particulate Matter Annual Air Emissions



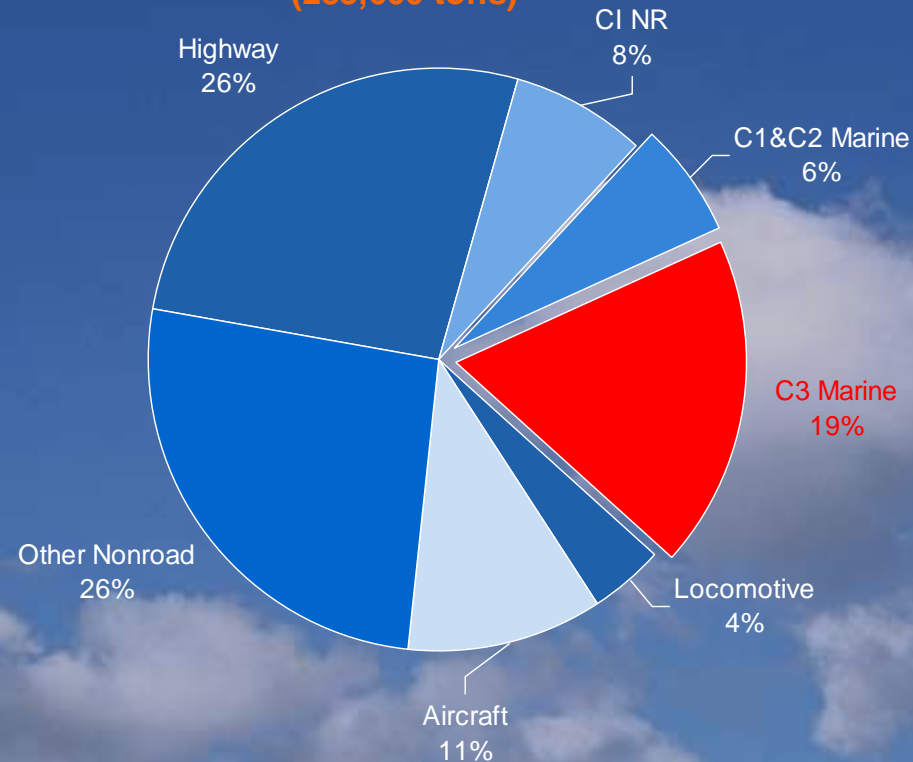
US Mobile Source PM_{2.5} Emissions



1996 Mobile Source PM_{2.5} Inventory
(572,300 tons)



2030 Mobile Source PM_{2.5} Inventory
(283,600 tons)

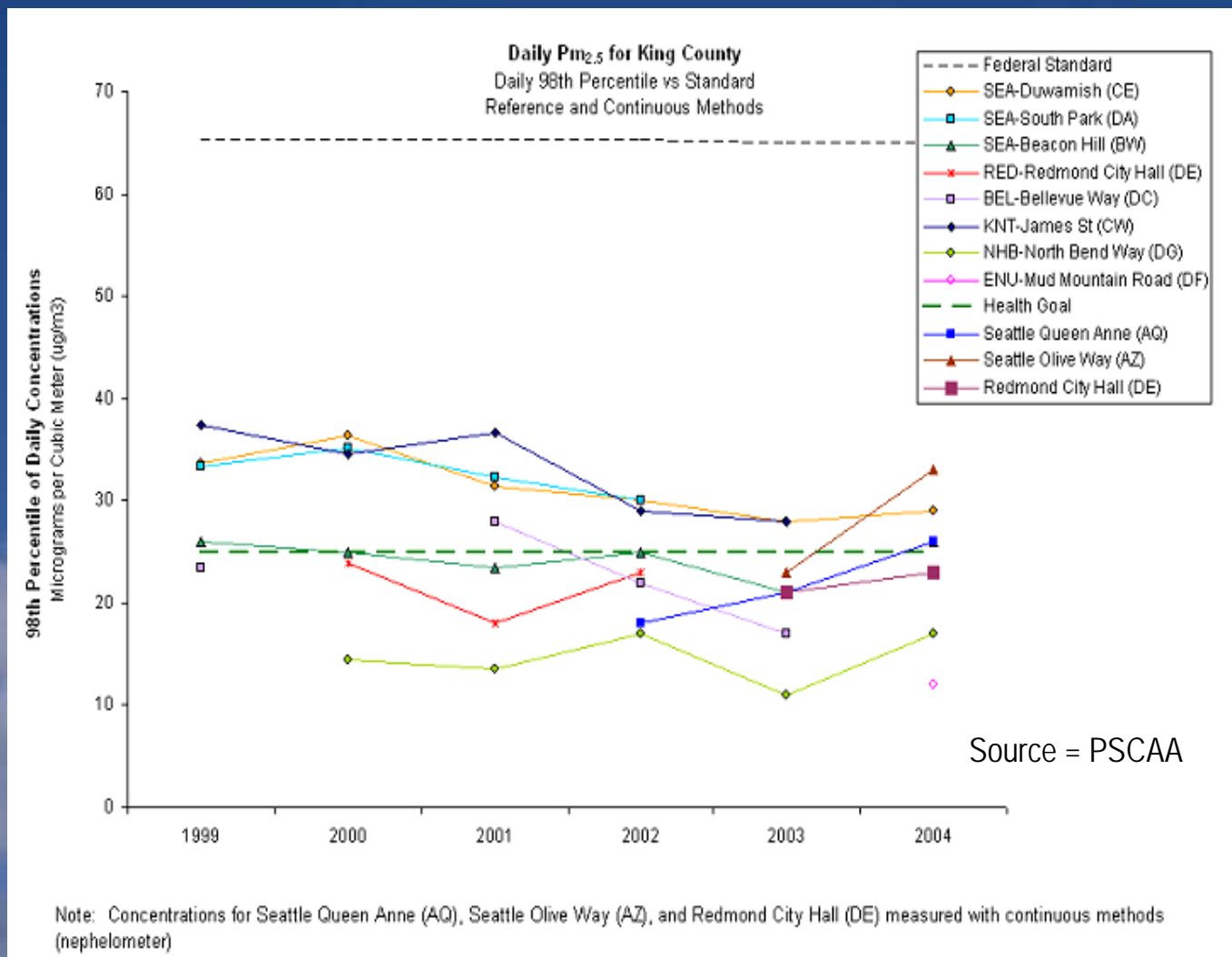


Ref.: Bill Charmley, U.S. EPA Office of Transportation and Air Quality, October 6, 2005

Particulate Matter in Puget Sound



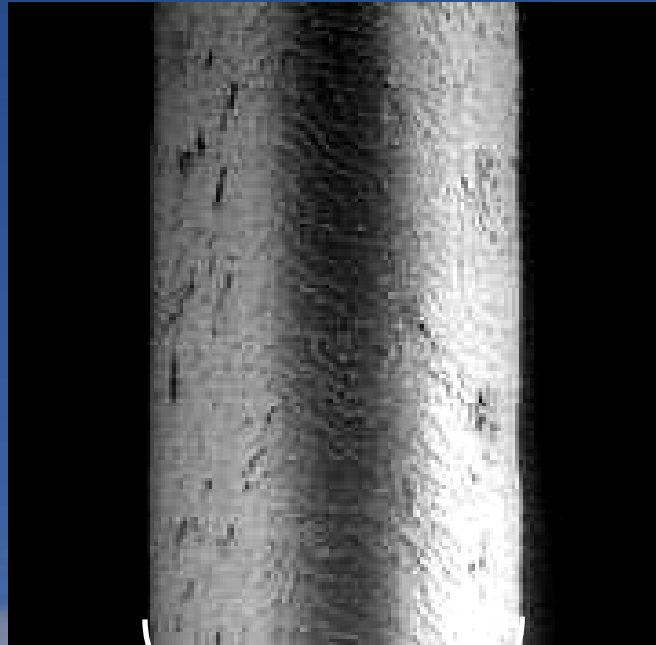
- The PSCAA Board adopted a PM goal lower than current EPA standard; EPA has proposed to revise the standard downward.
- Emissions from diesel engines are significant because of their toxicity.



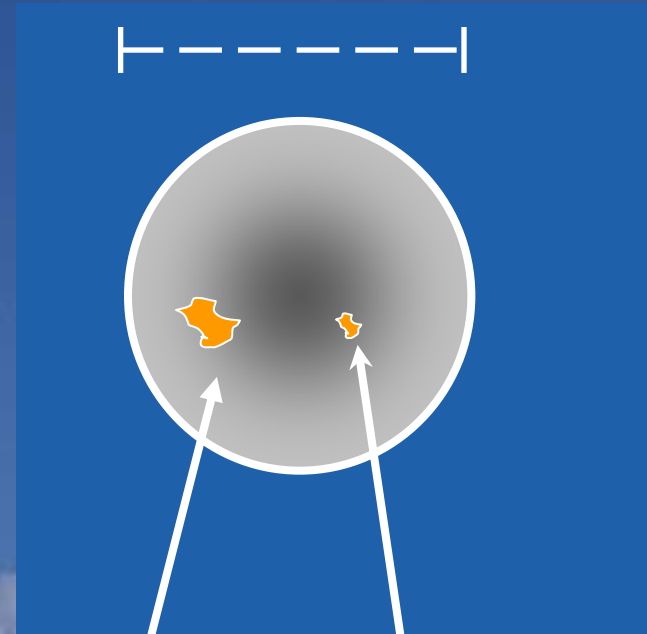
Airborne particles are a complex mixture of extremely small solids and liquid droplets



Hair cross section (70 μm)



**Human Hair (70 μm
diameter)**



**PM₁₀
(10 μm)**

**PM_{2.5}
(2.5 μm)**



- **Diesel marine engines, diesel trucks, and off-highway diesel equipment are major sources of PM, toxics and NOx emissions in the U.S. and our Region**
- **SOx emissions from diesel and bunker fuel contribute to the formation of secondary particulates (sulfate)**

Ref.: Bill Charmley, U.S. EPA Office of
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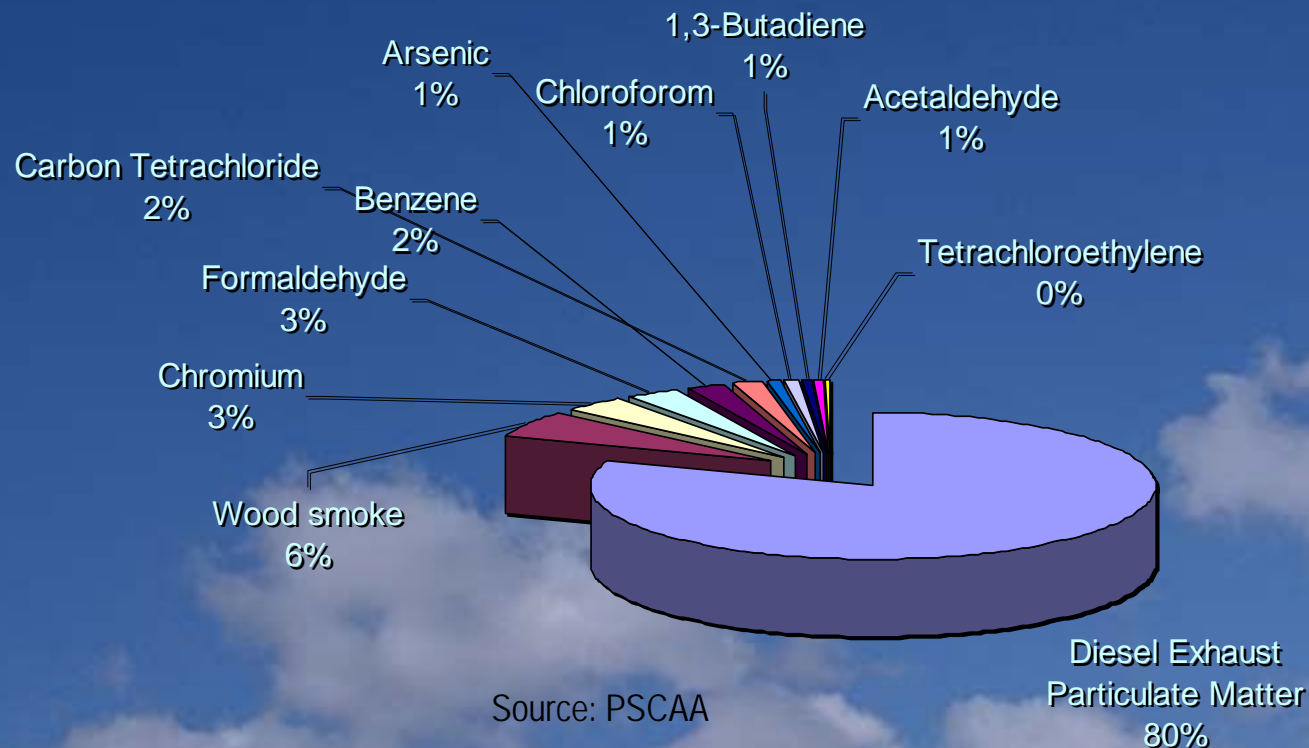
According to EPA's Health Assessment Document for Diesel Engine Exhaust:

- Long term (chronic) inhalation exposure is likely to pose a lung cancer hazard to humans
- Long term inhalation can damage the lung in other ways depending upon exposure
- Short term (acute) exposures can cause irritation of a transient nature, although highly variable across the population
- Evidence of exacerbation of existing allergies and asthma symptoms is emerging

Air Toxics in Puget Sound Region



Contribution to potential cancer health risk, Seattle 2001

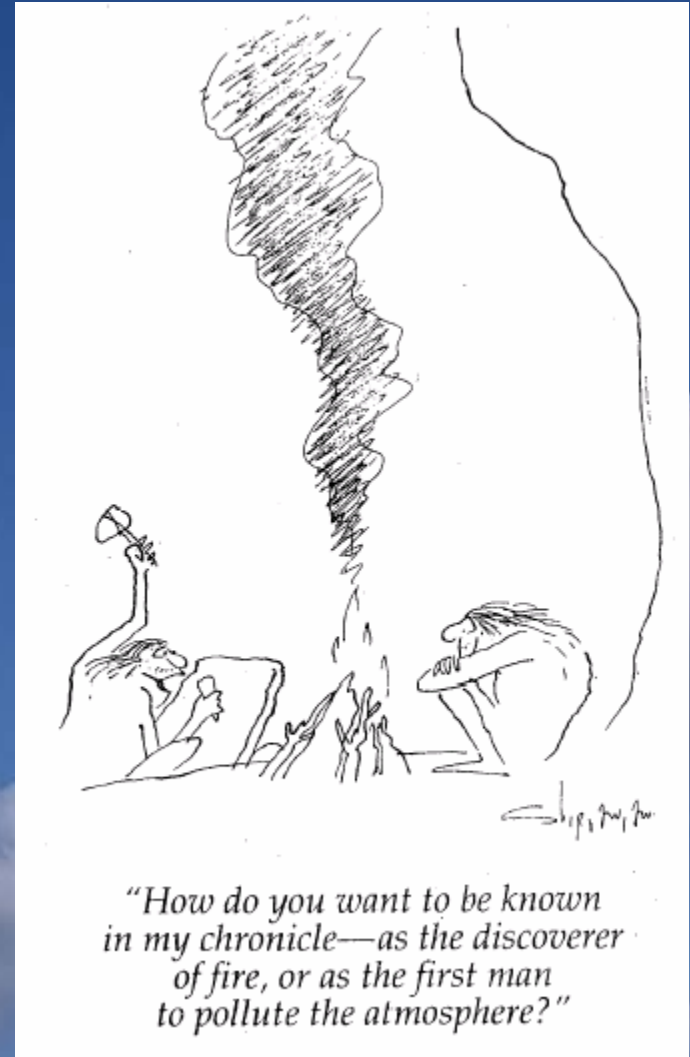


Diesel particulate matter, wood smoke based on concentrations at Beacon Hill (PMF model)
All other air toxics based on Seattle 6-site averages
Puget Sound Air Toxics Evaluation, October 2003

Why Wait? Diesel Solutions



- EPA 2007 (and later for non-road) engine and fuel rules will address only new engines - we want results sooner
- Diesel Solutions, a voluntary/incentive based program, brings cleaner fuels and retrofits to the Region
- This strong partnership has been reducing diesel emissions and improving public health in the region since 2001



EPA's Proposed Revisions to the PM_{2.5} Standard



- On December 20, 2005 EPA proposed revisions to the national air quality standard for fine particulate matter (PM_{2.5}), which are particles 2.5 micrometers in diameter and smaller
- Under terms of a consent decree, EPA agreed to propose whether to revise the PM_{2.5} by December 20, 2005; and committed to finalize any revisions to the standards by September 27, 2006.
- EPA is proposing to revise the PM 2.5 standard to lower the level of the 24-hour standard from the current level of 65 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to 35 $\mu\text{g}/\text{m}^3$.

EPA's Proposed Revisions to the PM_{2.5} Standard (continued)



- **EPA is basing this proposal on an assessment of a significantly expanded body of scientific information. The assessment concluded that the standard should be strengthened to better protect the public from short-term fine particle exposures.**
- **EPA is also proposing to retain the level of the annual PM_{2.5} standard at 15µg/m³. EPA based this on its assessment of several expanded, re-analyzed and new studies that have increased the agency's confidence in associations between long-term PM_{2.5} exposure and serious health effects.**

Why are we concerned about this proposal?



- **The EPA proposal identified Snohomish and Pierce counties as not meeting the proposed standards.**
- **The monitoring sites of concern are Marysville and Darrington in Snohomish County and Tacoma, South L Street in Pierce County.**
- **If the EPA finalizes its proposed standards at or below these levels, we will return to nonattainment.**
- **This will put increased pressure on the region to reduce its sources of fine particulate, including emission from diesel engines.**



- **Diesel engines are a significant source of particulate matter, toxics and oxides of nitrogen in the Puget Sound Region, leading to a variety of health impacts**
- **Long term (chronic) inhalation exposure is likely to pose a lung cancer hazard to humans**
- **Based upon the Clean Air Agency's toxic assessment, diesel is responsible for 80% of the potential cancer risk from regional outdoor air pollution**
- **Diesels are getting cleaner due to EPA standards and programs like Diesel Solutions**
- **EPA's proposed PM_{2.5} standards would require more emission control of PM sources, including diesel engines**

THANKS!

