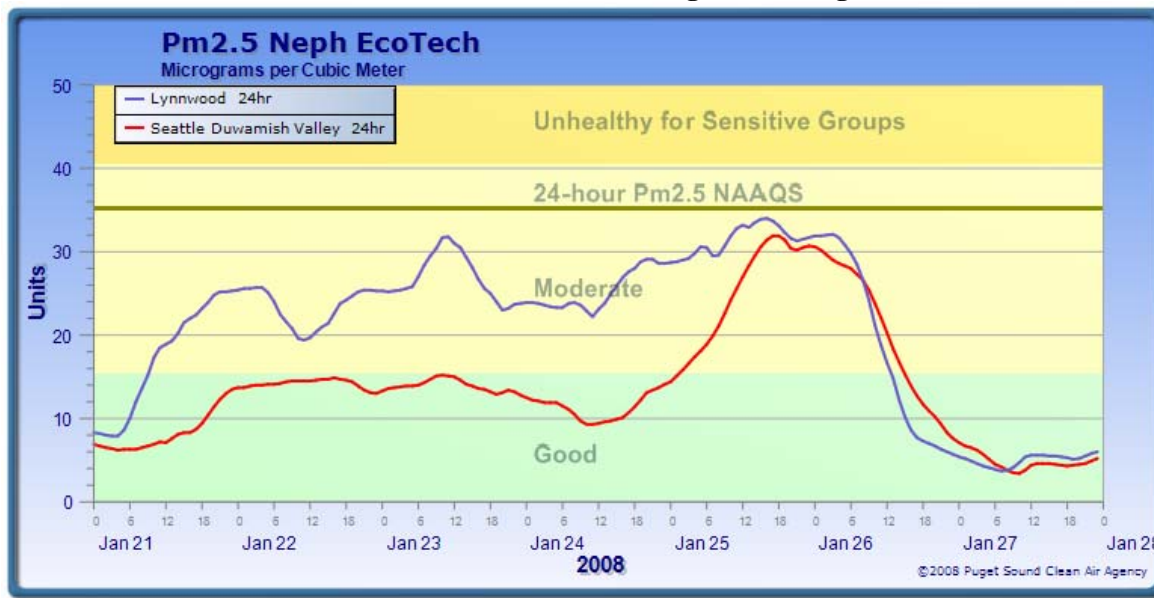


## Using Nephelometers to provide near real time fine particulate estimates For use in air quality forecasting and pollution curtailment actions In the Puget Sound area

The Puget Sound Clean Air Agency is responsible for providing air quality services to the 3.5 million residents living near the Seattle, Tacoma and Everett areas. Fine particulates dominate the aerosol and present the most significant challenges impacting public health and EPA's standards. The highest PM 2.5 concentrations occur in the late fall and winter seasons. These conditions occur in residential areas where the use of wood burning devices is a common source of home heating. During periods of stagnant meteorological conditions wood burning routinely creates unhealthy air quality necessitating the issuance of temporary control measures call Burn Bans. Continuous particulate monitors play an essential role in helping the Agency to track diurnal pollution levels, issues public air quality forecasts and make timely decisions to curtail wood burning.

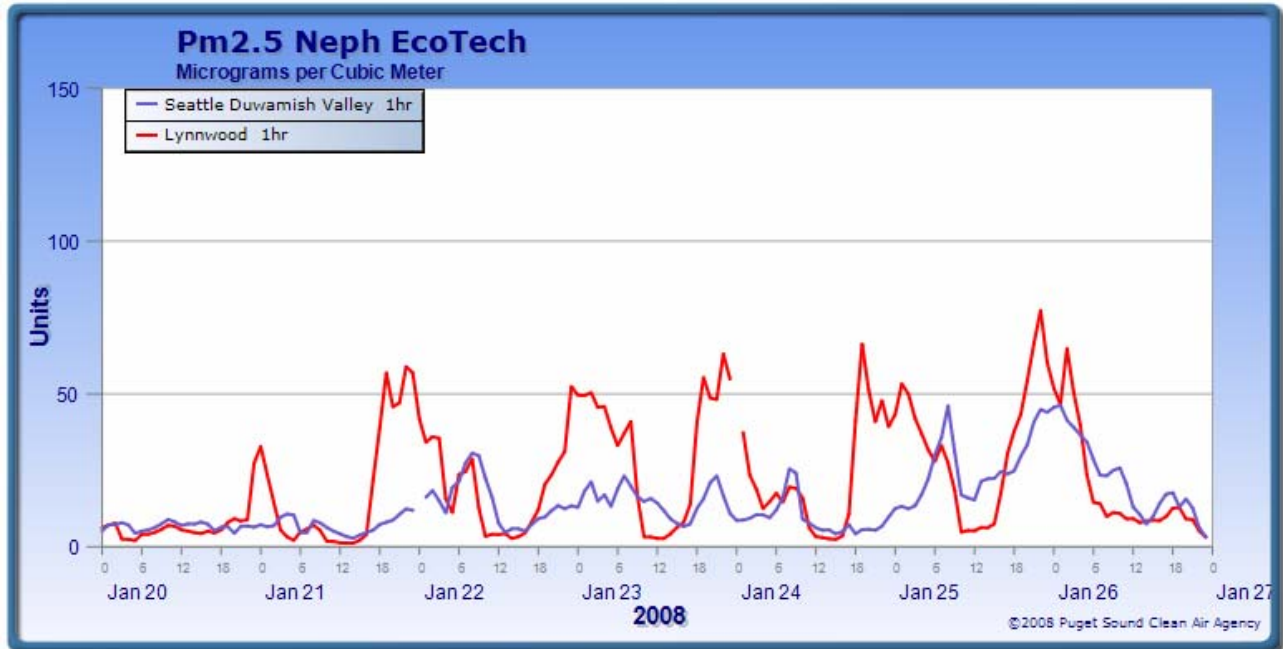
The Agency is recognized as a national leader in the use of Nephelometers in ambient air monitoring. Nephelometers, when correlated with EPA's Federal Reference Method (FRM) provide a cost effective, reliable and valued added PM 2.5 data source. The technology provides a high temporally resolved indication of rapidly changing pollution levels often seen when people heat homes with wood. One hour averages correctly show near real time emissions and running twenty hour averages show when pollution relative to EPA's standards and Washington State trigger levels for issuing curtailments. In 2006 the Agency began transitioning its network to ECOTECH Nephelometers to benefit from improved engineering, service and support. According to Mike Gilroy, Meteorologist and Manager of Technical Services, "Once you understand the real strengths of Nephelometry and these easy to operate devices, it is very difficult to see our network meeting operational expectations without their data".

**Fine Particulates at two air monitoring sites in Puget Sound**

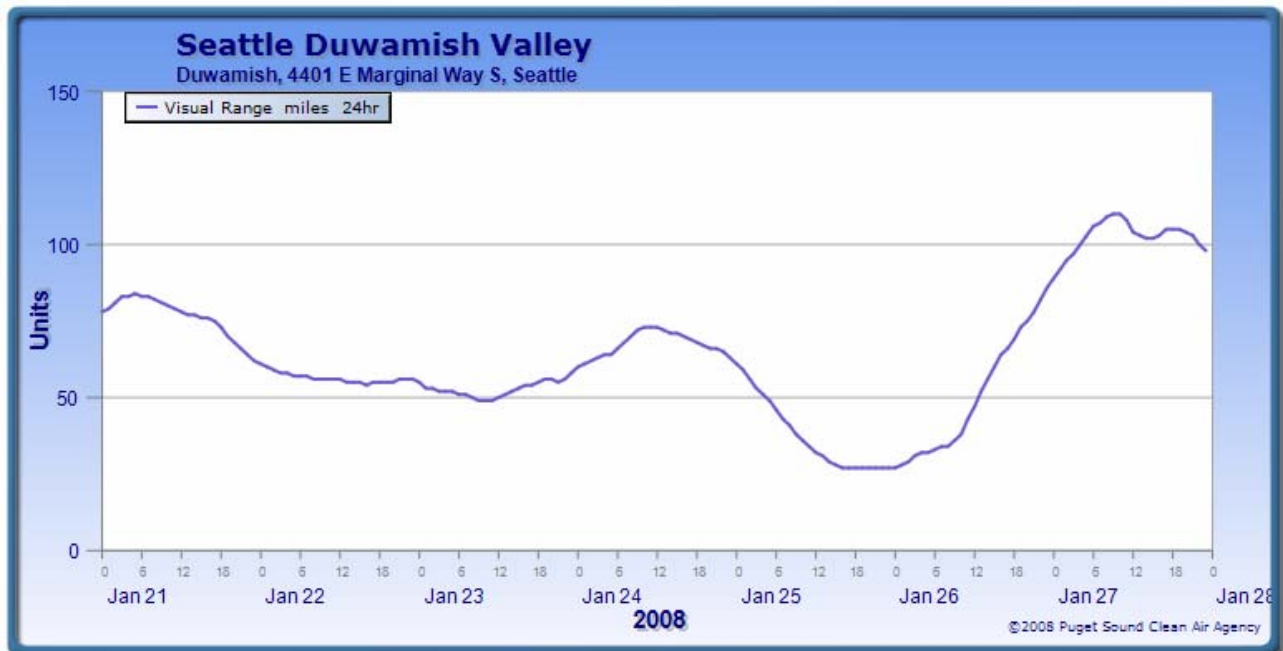


**Lynnwood residential site compared to Seattle Industrial area site. Wood smoke emissions from home heating account for higher levels of fine particulates.**

Using one hour averages to see behavioral patterns typical of residential heating with wood.  
Note the consistent late afternoon increase in PM 2.5 levels in residential area



Using Light scattering to calculate Visual Range



Nephelometers may be used to show webcams images as air quality tools showing changes in visibility resulting from increased fine particulates in the air.

<http://www.pscleanair.org/airq/visibility/default.aspx>