



Working Together for Clean Air

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Marine Emissions and Central Puget Sound



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● Presentation Outline:

- Air quality issues and priorities in Central Puget Sound
- The role of marine activities and the future outlook
- Marine emission sources and their contribution
- Solutions



Air Quality Issues and Priorities

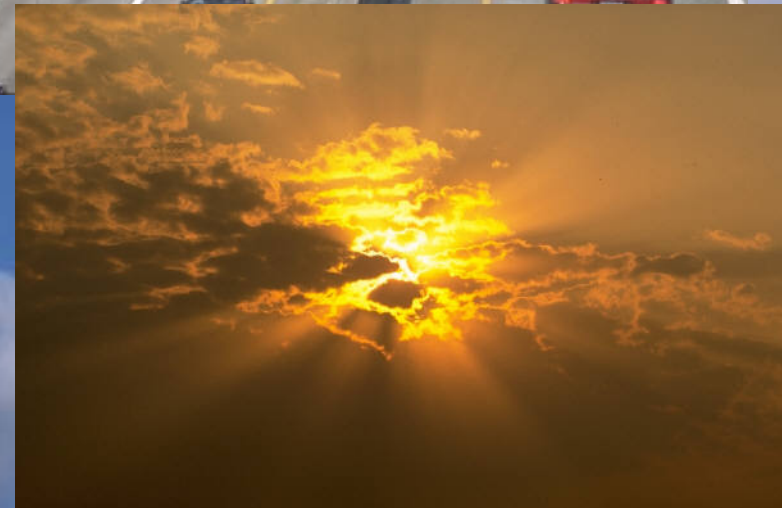


● Five focus areas:

- Ozone
- Fine particles
- Toxics
- Visibility
- Climate change



- A summer problem in Washington
- Unhealthy levels on hottest summer days
 - When temperatures are in upper 80's and higher
 - When air conditions are stagnant and warm air moves in from south
- NO_x & VOC emissions are smog precursors



What Are We Doing About It?



- **Summer “Smog Watch” alert to deal with episodes**
- **Low RVP gasoline program**
- **Updated Air Quality Maintenance Plan**

- **PM_{2.5} and air toxics are largest public health risk**
 - Lung irritation, asthma attacks
 - Correlation with heart arrhythmia
 - Premature deaths
- **Indoor and outdoor burning, on- and non-road diesel fuel combustion are primary sources**
- **We have established PM_{2.5} goals that are more stringent than the federal standard**
- **We believe the federal standard is likely to be revised to a more stringent level similar to our goal long term**

- **Our goal: Never violate the federal standard and protect public health more completely than the federal standard**
- **Stakeholders determined there are cost-effective strategies for early reductions in PM_{2.5} concentrations**





- **Further reduce outdoor burning consistent with state law**
- **Replace wood stoves and fireplaces with certified devices and cleaner fuels**
- **ULSD & retrofit diesel with particle traps and catalysts**
- **Cleaner marine fuels, improved operations and maintenance of marine diesel engines**
- **Support EPA engine standards and fuel strategies for diesel equipment**



- **Urban air toxics are a significant public health concern**
- **Recent EPA National Air Toxics Assessment (NATA)**
 - **King County among highest modeled levels of fuel-related toxics**
 - **Monitoring project verified the modeled concentrations**

Diesel Exhaust is a Key Source of Fine Particles



- Diesel exhaust contains ultra-fine particles bound up with toxic substances
- Ultra-fine particles act like a gas rather than a solid
- Invisible and bypass lung defenses
- Using California risk numbers, 70 to 80% of air toxics risk is attributable to diesel exhaust



- **Washington residents cherish views of Cascade and Olympic Mountains**
- **National parks and scenic areas in our state are impacted by urban pollution**
- **Ozone precursors, SO₂ and fine particles reduce visibility**
- **Air quality improvements also improve visibility, but keeping up with combustion growth is a challenge**

- **West Coast Governors and my Board have identified reducing climate change impacts as a high priority**
- **My Agency is currently conducting a stakeholder process to identify key climate change strategies**
- **Marine vessels consume large amounts of fuel when hoteling and that equals large CO2 emissions**
- **Many port-related activities contribute significantly to emissions – switch engines, trucks, support equipment**
- **There is collateral air quality and visibility benefit from reduced marine and port diesel emissions**

- **Cruise, cargo, & tanker vessels**
- **Hoteling ocean going vessels**
- **WA Ferries & Victoria Clipper**
- **Tugboats and fishing vessels**
- **Coast Guard vessels**
- **Recreational boats**
- **Port construction – dredgers, graders, etc.**
- **Port support activities**

Growth in Cruise Vessel Visits



●1998: 12	2001: 57
●1999: 6	2002: 70
●2000: 39	2003: 100

2004: 148 and growing



- **Vessels enter Strait of Juan De Fuca**
- **Mountains on either side of channel**
- **Travel longer in channel than most ports – 120-140 miles inland before Seattle & Tacoma**
- **Substantial tug activity**
- **Ferries integral part of transportation**
- **Substantial tour boat activity**
- **Canadian air quality models show hot spots**

Commercial Marine Vessels (CMVs) Versus all Sources



CMV Emissions as a % of All Emissions

NOx	11 – 27 %
PM2.5	2 – 8 %
SOx	17 – 75 %
CO2	~ 4 %

- A voluntary diesel retrofit program developed in collaboration with EPA's Voluntary Retrofit Program
- Introduced ultra-low sulfur diesel fuel and retrofits
- A partnership... EPA, Conoco/Phillips, King County, Boeing and Seattle were critical initial partners
- Reaching transit, school buses, municipal fleets, solid waste and other sectors
- Program is expanding into rail, marine & construction



Conclusions



- **Marine and port emissions significantly affect air quality**
- **We need to know more about the total picture**
- **We want strong and healthy ports**
- **We want to dramatically reduce the impacts of diesel exhaust on public health**



- **We are already collaborating with other West Coast states and Canada on air quality and climate change**
- **Collaboration between ports, maritime industry and air agencies would be beneficial**
- **Coordination between West Coast of US, Canada and Mexico is necessary to avoid unfair economic advantage**
- **We know there are many promising ways to achieve cost-effective reductions to reduce risk**
- **We are asking ports and maritime industry to recognize they share in the problem and the solutions and ask that we work together collaboratively on these issues**