Sprawl and Air Quality

WASHINGTON TRANSPORTATION FACTS • FACT SHEET #3

Although Washington state's air quality has improved in recent years, polluted air is still a very real health problem in many parts of the state. Air pollution can aggravate respiratory conditions such as asthma, contribute to lung cancer, and even damage the developing lungs of young children.

Cars and trucks are the dominant source of air pollution in Washington—which means that compact, well-designed communities that reduce driving can substantially lower total emissions of air pollution.

CARS AND TRUCKS ARE THE BIGGEST SOURCE OF AIR POLLUTION IN WASHINGTON STATE

- In 2002, motor vehicles—including cars, trucks, and buses—emitted nearly **three-fifths of all federally-regulated air pollution** in Washington State.[1]
- In the Puget Sound region, **cars and trucks produce more than two-thirds of all carbon monoxide emissions** from all sources, about one-third of all smog-forming nitrogen oxides, 30 percent of volatile organic compounds (VOCs), and 27 percent of sulfur dioxide—pollutants that can contribute to asthma, lung disease, and cancer.[2]
- Each year, **a typical car in greater Puget Sound releases 700 pounds of the most troublesome air pollutants**, including cancer-causing soot and smog precursors, plus an additional 6 tons of emissions that contribute to global warming.[3]

What's my impact?

"The average Puget Sound car traveling 12,000 miles annually releases over 12,000 pounds of greenhouse gases and 700 pounds of regulated air pollutants."[3]

SPRAWLING, CAR-DEPENDENT DEVELOPMENT CAN INCREASE AIR POLLUTION

- Residents of sprawling suburbs tend to **drive long distances to reach jobs, stores, schools, and services**. In many low-density suburbs, nearly every trip requires a car. This extra driving creates more air pollution.[4] On average, the residents of the lowest-density suburbs generate the highest per-capita vehicle emissions.

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- In the Puget Sound region, **the air in suburbs isn't necessarily cleaner than in neighborhoods nearer to city and town centers**. For example, the highest levels of smog in the greater Puget Sound are found in North Bend and Enumclaw, suburbs that are far from the urban core.[5]
- The **air in your car may be some of the worst** you'll breathe all day. Busy highway traffic turns roadway air into a "tunnel of pollution," exposing drivers to high levels of benzene, fine soot, volatile organic compounds (VOCs), and other pollutants from vehicle exhaust.[6]

COMPACT, WELL-DESIGNED COMMUNITIES CAN DECREASE DRIVING, WHICH REDUCES AIR POLLUTION EMISSIONS

- Residents of **compact, transit- and pedestrian-friendly neighborhoods** tend to drive substantially less than do residents of sprawling suburbs. Fostering such neighborhoods—and discouraging the lowest-density sprawl—can reduce total vehicle emissions by allowing residents to drive less.[7]
- Creating **neighborhoods that feature a mix of housing, jobs, stores, and services** can also reduce how much residents drive, lessening overall vehicle emissions.
- Promoting **compact, concentrated job centers**—which make it convenient for many workers to commute by transit and carpool—can help reduce total vehicle pollution. In the Puget Sound region, people who work in the most concentrated employment centers emit 30 percent less nitrogen oxides, and 20 percent less carbon dioxide, than people who work in areas with slightly lower concentrations of jobs.[8]
- Neighborhoods with **interconnected, grid-like street patterns** allow residents to travel shorter distances for many trips, which can reduce how much air pollution they create. A King County study found that residents of neighborhoods with the most interconnected street networks drive one-third fewer miles, and emit one-fifth less smog precursors per person, than those who live in the most sprawling areas.[9]

Sources on following page, or visit http://www.northwestwatch.org/sprawl_health/

SOURCES

[1]Washington State Department of Ecology website, at www.ecy.wa.gov/programs/air/pdfs/Pollution_Pie_2002.pdf

[2]Puget Sound Clean Air Agency."2004 Air Quality Data Summary" (July 2005). http://www.pscleanair.org/airq/reports.shtml.

[3]Puget Sound Clean Air Agency, Smogwatch website, at www.pscleanair.org/smog/smogwatch.shtml. Also see U.S. Environmental Protection Agency, Office of Transportation and Air Quality,"Consumer Information: Emissions Facts" at www.epa.gov/otaq/consumer/f00013.htm.

[4]Frank, Lawrence, Brian Stone Jr., and William Bachman."Linking Land Use with Household Vehicle Emissions in the Central Puget Sound: Methodological Framework and Findings." 2000, Transportation Research Part D 5, 3: 173-96. Reductions eyeballed from graphs.

[5]Puget Sound Clean Air Agency."2004 Air Quality Data Summary" (July 2005). http://www.pscleanair.org/airq/reports.shtml.

[6]Rank, Jette; Folke, Jens; Jespersen, Per Homann."Differences in Cyclists and Car Drivers Exposure to Air Pollution from Traffic in the City of Copenhagen"The Science of the Total Environment 2001; v.279; pp.131-136.

[7]Frank, Lawrence, Brian Stone Jr., and William Bachman."Linking Land Use with Household Vehicle Emissions in the Central Puget Sound: Methodological Framework and Findings." 2000, Transportation Research Part D 5, 3: 173-96.

[8]Frank, Lawrence, Brian Stone Jr., and William Bachman."Linking Land Use with Household Vehicle Emissions in the Central Puget Sound: Methodological Framework and Findings." 2000, Transportation Research Part D 5, 3: 173-96. Reductions eyeballed from graphs.

[9]Frank, Lawrence (Lawrence Frank & Company, Inc.) "A Study of Land Use, Transportation, Air Quality, and Health (LUTAQH) in King County, WA: Executive Summary" September 27, 2005, Submitted to King County officials.