

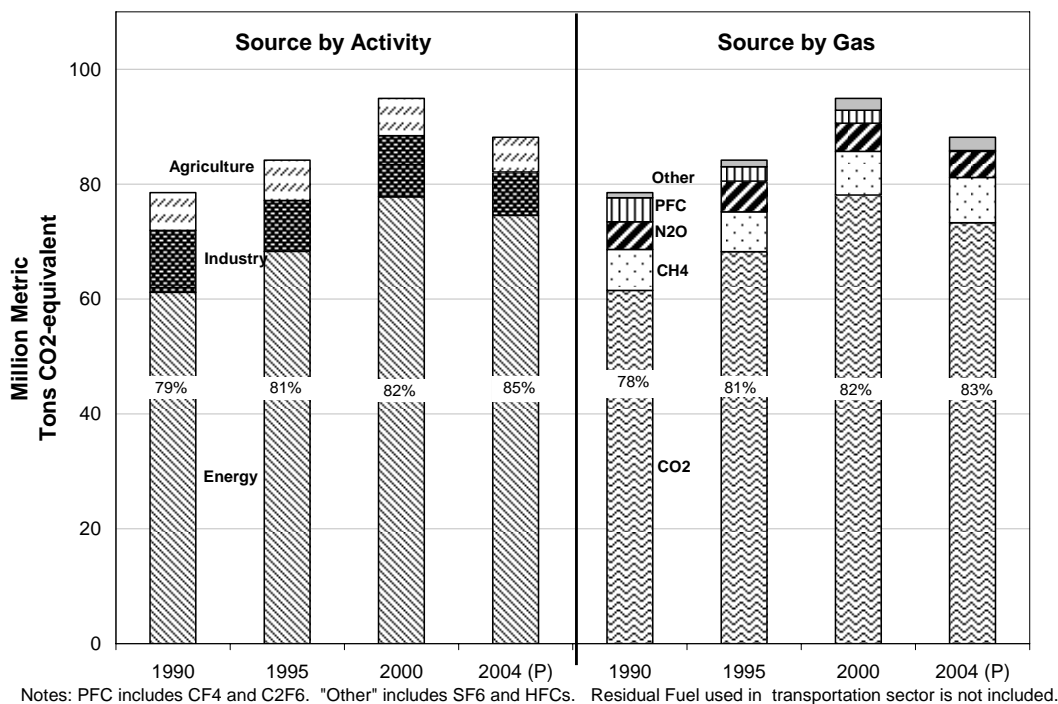
Summary Report of Washington's Greenhouse Gas Emissions: Sources and Trends

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This document is a summary of the report *Washington's Greenhouse Gas Emissions: Sources and Trends*¹, released in 2006. Data for 2003 and 2004 presented in this document are preliminary and are denoted with a P in the figures.

Figure 1 shows the contributions from the various sectors and gases for the years 1990, 1995, 2000 and 2004. Energy related emissions are the dominant source of GHG emissions, carbon dioxide (CO₂) is the dominant GHG followed by methane, nitrous oxide, perfluorocarbons and sulfur hexafluoride.

Figure 1 Greenhouse Gas Emissions by Sector and Gas Type



As seen in Figure 2, the majority of energy-related GHG emissions and almost half of total emissions are from the transportation sector. Emissions from the direct use of fossil fuels (excluding electricity-related emissions) in the residential, commercial and industrial sectors have been relatively constant over the past 40 years, even though the use of energy in these sectors has increased. There has been fuel switching from coal and petroleum fuels to natural gas, which emits fewer pounds of carbon dioxide per million Btu of heat content. Also, there has been an increase in efficiency with which fossil fuel energy is utilized in these sectors. However, if CO₂ from electric power generation is apportioned to the commercial and residential sectors according to their consumption of electricity, emissions for these sectors more than doubles.

¹ This report is available at the CTED Energy Policy Division website: <http://www.cted.wa.gov/site/526/default.aspx>.

² Transportation excludes the use of residual fuel. See full report for further details.

Figure 2 All Greenhouse Gas Emissions in Washington for 2004 (preliminary estimate)

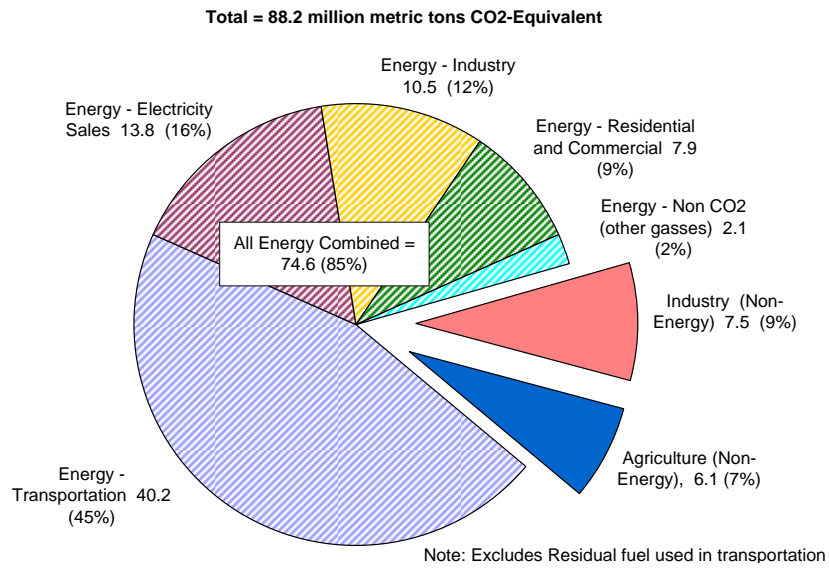


Figure 3 shows that most of the growth in overall CO₂ emissions in Washington State is from the transportation or electricity generation sectors. The total transportation² CO₂ emissions are more than three times higher today than in 1960.

Figure 3 Cumulative Energy-related CO₂ Emissions by Sector

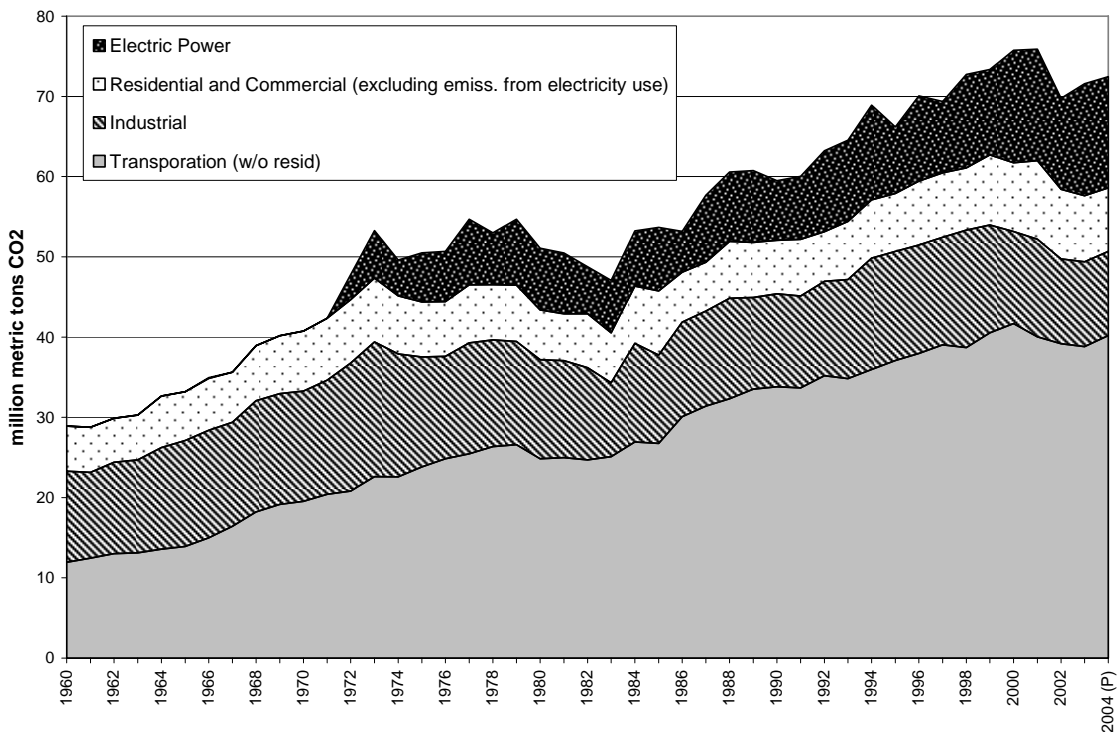
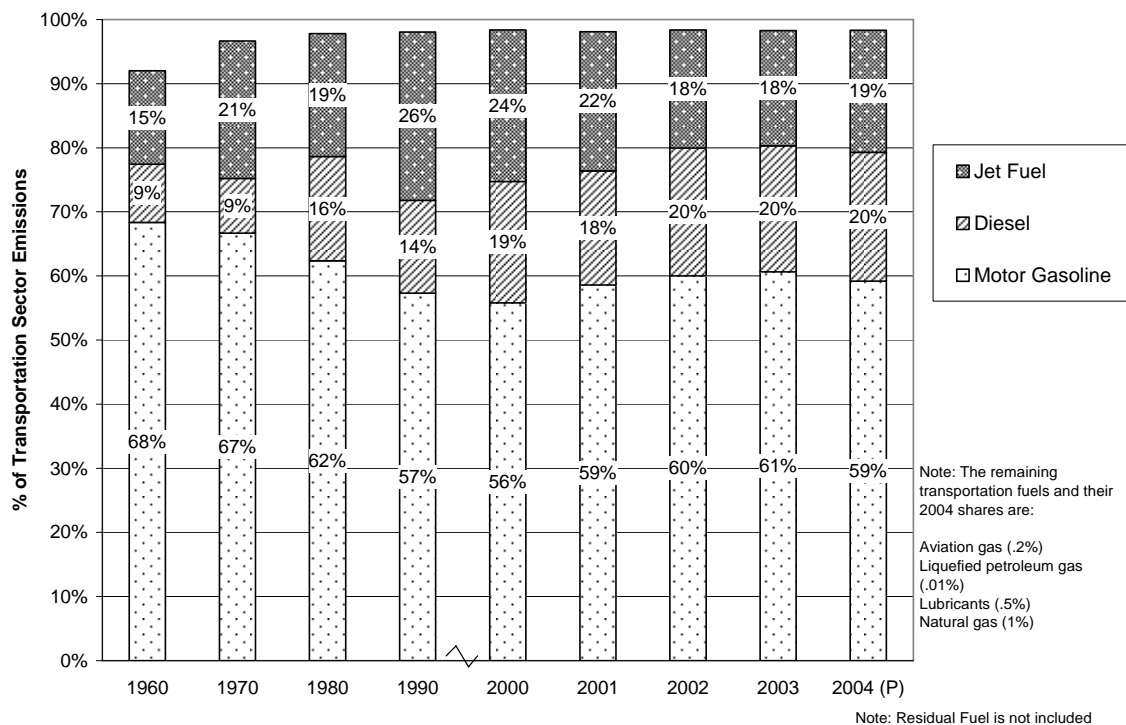


Figure 4 looks closer look into the transportation sector. Motor gasoline, diesel and jet fuel CO₂ emissions are responsible for nearly all the transportation sector, accounting for 98 percent of this sector’s emission in the year 2004. While absolute CO₂ emissions have increased for the transportation sector, the share of CO₂ emissions within this sector corresponding to motor gasoline use declined through 2000.

From the late 1970's through 1985 automotive fuel economy standards (CAFE standards) and high fuel prices resulted in a rapid increase in vehicle fuel economy and slowed the increase in per capita vehicle-miles traveled (VMT). In more recent years, the waning effects of vehicle fuel efficiency standards, increasing population and per capita VMT resulted in growth in transportation CO₂ emissions. Washington ranks 26th in per capita petroleum-related emissions (8.4 tons per capita) and is equal to the national average.

Figure 4 Transportation Emissions



Carbon dioxide emissions from electric power generation are quite different from the other sectors (See Figure 5). Up until 1972, there were virtually no carbon dioxide emissions, as electric power in Washington was generated almost entirely by hydropower. When the coal fired Centralia power plant came on line there was an obvious and dramatic increase in emissions from the electric power sector. Emissions stayed relatively constant until the early 90's when natural gas began to be used for electrical generation and the emissions increased, although emissions from Centralia are still the majority. Over the last 40 years, about a third of the increase in Washington's CO₂ emissions has been from the electric power sector.

Another method of accounting for electricity emissions is to look at the electricity *purchased or generated* for use by electric utility customers in Washington (often referred to as load based CO₂ emissions) rather than the electricity that is generated in Washington but not necessarily for consumers here. Figure 6 compares these two methods. It is apparent that some utilities in our state rely heavily on out-of-state fossil-based electricity generation to serve their customers and to balance seasonal electricity needs. Figure 6 reveals that CO₂ emissions associated with electric consumption are actually 30 percent higher than estimated using generation based data.

Figure 5 Carbon Dioxide Emissions from In-State Electric Power Generation by Fuel Type

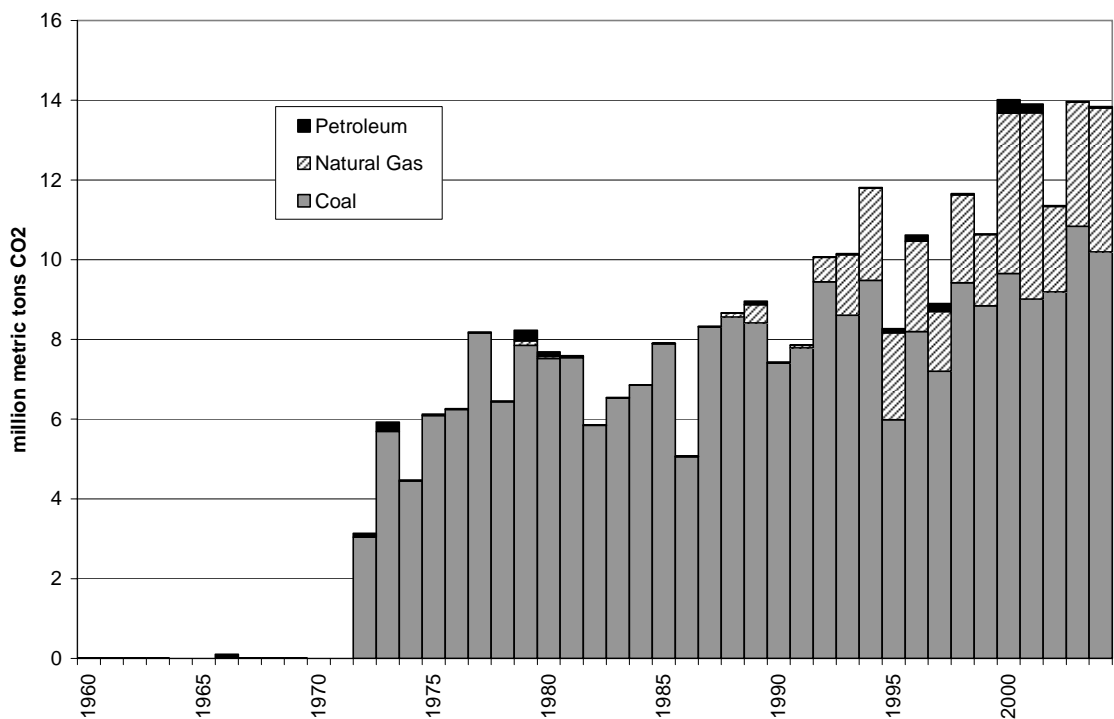
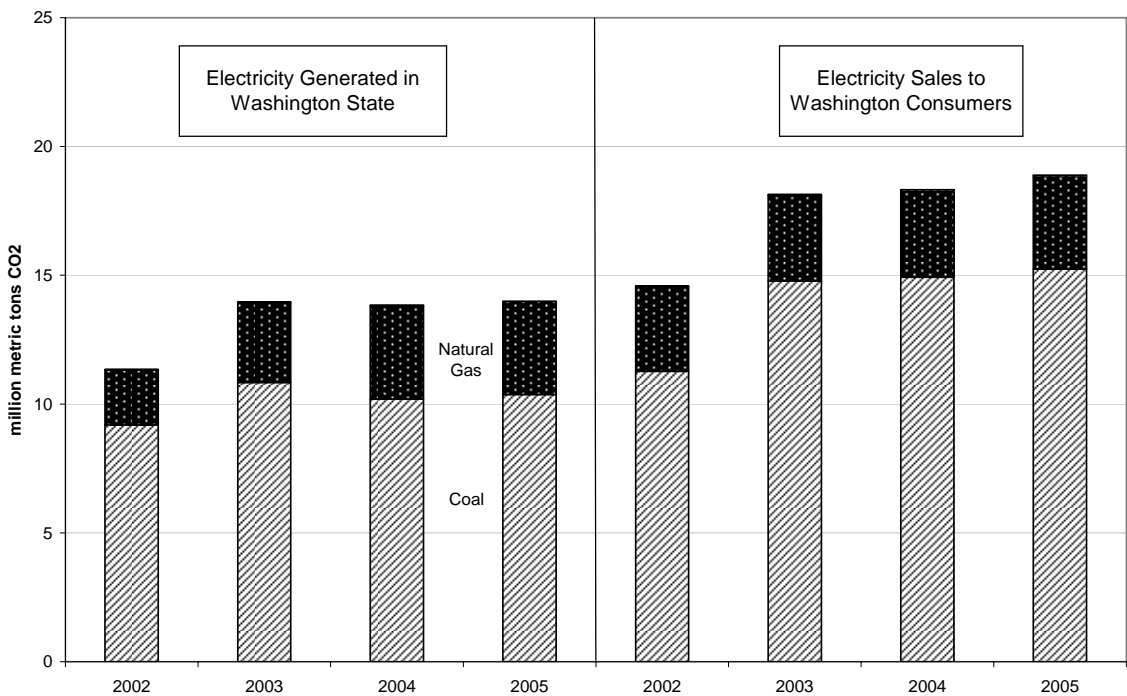


Figure 6 Washington State Electricity Sector CO₂ Emissions: Generation vs. Sales Basis.



Petroleum also emits CO₂ but in quantities too small to register on this chart.