

## Factsheet 1: The Arithmetic of Pollution Taxes

Pollution taxes come in many forms. Throughout the country there are currently dozens of pollution taxes, ranging from an extremely high federal tax on chlorofluorocarbons to modest state taxes on pesticides and fertilizers and garbage services.

Most efforts in the U.S. and in Europe regarding ecological tax reform focus on energy or carbon taxes. There are three reasons for this.

- They are relatively easy to administer.
- They can generate large revenue streams and therefore lend themselves to true tax restructuring.
- They are related to the phenomenon of global warming. Many nations, including the United States under President George Bush and Bill Clinton have agreed to develop strategies to reduce greenhouse gas emissions. Carbon dioxide represents about 50 percent of the impact of greenhouse gases.

According to a report by the Minnesota Department of Natural Resources to the state legislature, in 1988 Minnesota generated over 24 million tons of carbon emissions each year inside the state. If imported electricity, which accounts for about 17 percent of all electricity consumed in the state were included, the total carbon emissions would have risen to 27 million tons.

**Table 1**  
**Minnesota Emissions of Carbon By Sector (1988)**

<u>Sector</u>	<u>Emissions (000's Tons)</u>	<u>Percentage</u>
Residential	2,833	11.6%
Commercial	1,901	7.8
Industrial	2,752	11.3
Agricultural	734	3.0
Transportation	7,755	31.8
<u>Electric/Steam</u>	<u>8,448</u>	<u>34.6</u>
<b>Total</b>	<b>24,423</b>	<b>100.0</b>

Sometimes proponents of greenhouse gas taxes talk almost interchangeably of carbon and carbon dioxide taxes. One pound of carbon, if burned, generates 3.67 pounds of carbon dioxide. Thus Minnesota, in 1988, generated about 90 million tons of carbon dioxide. Similarly, a \$50 per ton tax on carbon emissions translates into about a \$14 per ton tax on carbon dioxide emissions.

The impact of carbon taxes depends on the carbon content of the fuel burned. Coal contains the highest proportion of carbon and therefore would incur the greatest burden from a carbon tax. Natural gas contains the lowest percentage of carbon and therefore would competitively benefit from such a tax.

Table 2 provides information about the price impact on various sources of energy. As we can see, a \$50 per ton tax on carbon would raise the price of gasoline by 15 cents per

gallon and the price of coal-fired electricity, which accounts for 60 percent of Minnesota's overall electricity, by about 1.5 cents per kWh.

**Table 2**  
**Price Impact of Carbon Taxes**

<b><u>Unit</u></b>	<b><u>\$10/T</u></b>	<b><u>\$50/T</u></b>
Gallon of Gasoline	\$0.03	\$0.15
Ton of Coal	\$6.00	\$30.00
100 Cubic Ft. of Natural Gas	\$0.15	\$0.76
KWh(coal fired)	\$0.003	\$0.015