

this complete program beginning in 2007 and continuing for 30 years. Also included is an estimate of the cost per ton of emissions reductions realized by this program for NMHC+NO<sub>x</sub>, PM, and SO<sub>2</sub>.

#### 1. Annual Costs for the 500 ppm Fuel Program

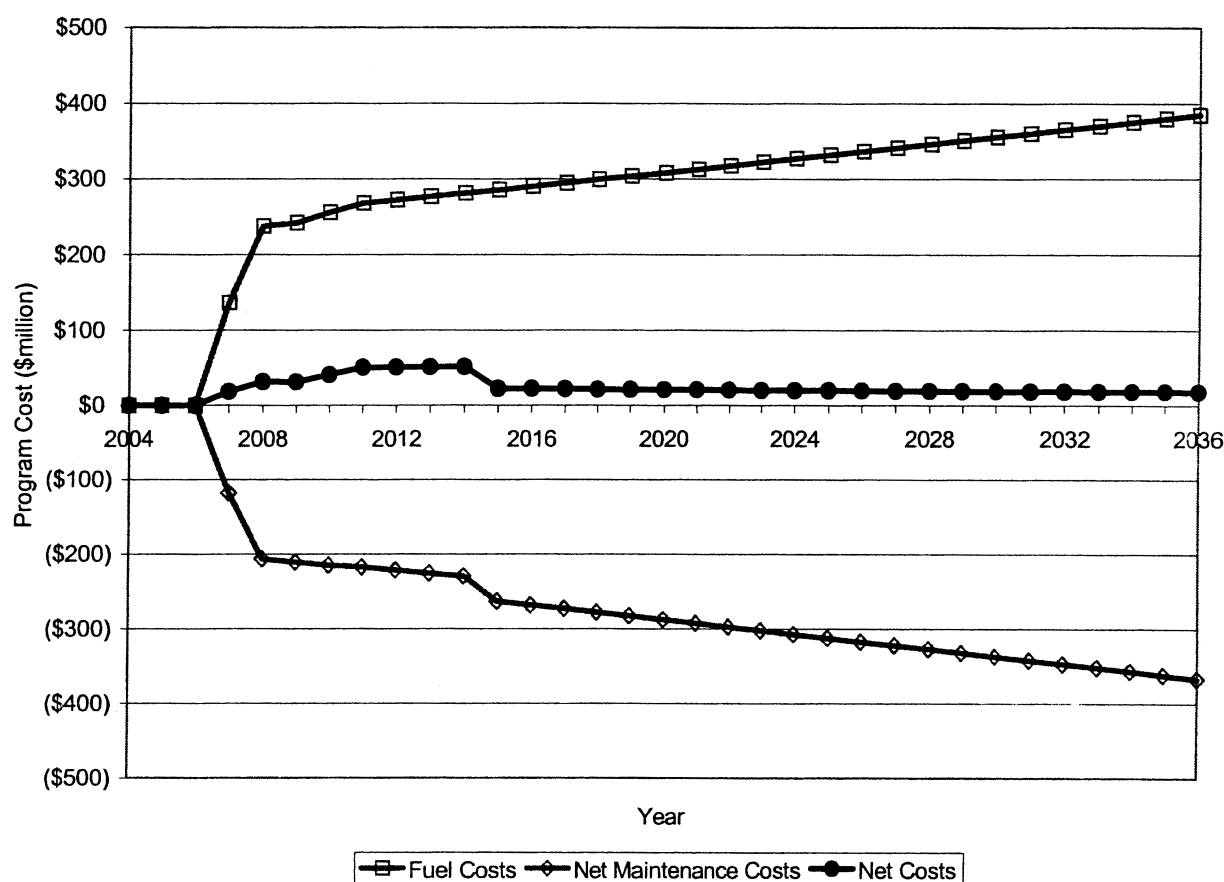
Cent per gallon costs for the proposed 500 ppm fuel program (*i.e.*, the reduction to a 500 ppm sulfur cap) were presented in section V.A. Having this fuel would result in maintenance savings associated with increased oil change intervals for both the new and the existing fleet of nonroad,

locomotive, and marine engines. These maintenance savings were discussed in section V.B. There are no engine and equipment costs associated with the 500 ppm fuel program because new emission standards are not part of that proposed program. Figure V.D-1 shows the annual costs associated with the 500 ppm fuel program.

As can be seen in Figure V.D-1, the costs for refining and distributing the 500 ppm fuel range from \$250 million in 2008 to nearly \$400 million in 2036. These control costs are largely offset by the maintenance savings that range from \$200 million in 2008 to \$380 million in

2036. Despite the fact that the costs of the 500 ppm fuel for nonroad diesel fuel is 2.5 cents/gallon and the maintenance savings are 3 cents per gallon, the net costs are positive because of the costs for the locomotive and marine fuel is not off-set by the maintenance savings. As a whole, the net cost of the program in each year is essentially zero, ranging from \$50 million in the early years to only \$18 million in 2036. The net present value of the net costs and savings associated with the proposed 500 ppm fuel program during the years 2007 to 2036 is estimated at \$510 million.

**FIGURE V.D-1 -- ANNUAL COSTS OF THE 500 PPM FUEL PROGRAM**



#### 2. Cost Per Ton for the 500 ppm Fuel Program

The 2007 fuel program would result in large reductions of both SO<sub>2</sub> and PM emissions. Roughly 98 percent of fuel sulfur is converted to SO<sub>2</sub> in the engine with the remaining two percent being exhausted as sulfate PM. Because the majority of the emissions reductions associated with this program would be SO<sub>x</sub>, we have attributed all the control costs to SO<sub>x</sub> in calculating the cost per

ton associated with this program. However, we have modeled both the SO<sub>x</sub> and PM reductions so that our inventory and benefits analysis fully account for them.

As noted above, we have calculated both the costs and emission reductions of the 500 ppm fuel program as if it were to remain in place indefinitely. Figure V.D-1 shows the costs in each year of the program, the net present value of which is estimated at \$510 million. We

have estimated the 30 year net present value of the SO<sub>x</sub> emission reductions at 5.6 million tons.

Table V.D-1 shows the cost per ton of emissions reduced as a result of the proposed 500 ppm fuel program. The cost per ton numbers include costs and emission reductions that would occur from both the new and the existing fleet (*i.e.*, those pieces of nonroad equipment that were sold into the market prior to the proposed emission standards) of