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TECHNICAL UPDATE

GREENHOUSE GAS REDUCTIONS AND THE OILHEAT RESEARCH AT BROOKHAVEN NATIONAL LABORATORY

By John E. Batey, PE

A research program to improve the efficiency of residential oil heating equipment has successfully operated at Brookhaven National Laboratory for twenty years under the direction of the US Department of Energy. While receiving only one million dollars a year in funding, the 35 million Americans who rely on oil heat in their homes and businesses saved more than ***500 times more than the cost of the program*** through reduced fuel use. The Brookhaven oil heat research program has also helped to substantially reduce emissions of carbon dioxide gas, considered by some to contribute to global warming, by more than 470 million tons over the past 15 years. Continued and expanded funding for this vital research activity is needed so that oil heat consumers and the nation can continue to benefit from higher efficiency oil equipment, lower fuel oil use, lower energy costs, and lower air emissions through new technologies including advanced oil burners *which are now under development*.

The US Department of Energy deserves high praise for operating the Brookhaven program continuously for the past two decades. It has consistently accomplished its primary goal of advancing the efficiency of oil heating equipment and has been one of the most successful and cost-effective programs ever operated by the USDOE. The attached plot is based on a USDOE publication (DOE/EIA-0214) and it shows quantitatively the success of past oil heat conservation activities. In 1977 residential fuel oil use was 1,994 trillion BTU, and in 1992 the consumption was only 865 trillion BTU. From 1977 through 1992 the number of oil heated homes fell by about one-fourth, and efficiency improvements have reduced fuel oil use in homes by more than 40 percent. This is a remarkable record of accomplishment unmatched by other energy use sectors in the US.

The improved efficiency and lower fuel use facilitated by the USDOE oilheat research program also continues to reduce air emissions including carbon dioxide gas. If all energy use sectors reduced fuel consumption by 40% as accomplished to date by residential oil heat, the global warming reduction targets for greenhouse gases that have recently been proposed worldwide could be reached easily.

The US Department of Energy's oil heat research program at Brookhaven National Laboratory must be expanded so that future efficiency advances and emission reductions can be realized. The program pays for itself 500 times over based on fuel cost savings in oil heated homes. The added "environmental cost" savings from lower carbon dioxide emissions by reduced residential fuel oil consumption (from 1977 to 1992) has already reached $10 billion (ref DOE/EIA-0598, Table 3).

Continued funding for the oil heat research program at Brookhaven National Laboratory is justified solely on its present and future contributions to lower carbon dioxide emissions in the US. This program, which historically has cost only one million dollars a year, has already helped to reduce carbon dioxide emissions by more than 30 million tons annually which is valued at more than $500 million dollars a year based on published environmental cost estimates. **An increase of 50% a year above the $1 million level is strongly recommended to accelerate market acceptance of many recent burner advances that have been produced by Brookhaven. This program will lower greenhouse gas emissions by the US through the use of advanced high efficiency oil burners.**

For more information regarding the Brookhaven oil heat program or its past and future accomplishments, please call John Batey, engineering consultant to the Oilheat Manufacturers Association at (203) 459-0353.