

## **Studies to support the lowering of the sulfur content of fuel oil - From 41 N.J.R. 4156(a)**

The Department anticipates that the overall economic impact of the proposed amendments will be a positive one.

The Department evaluated the availability and production cost of heating oil with sulfur-by-weight specifications of 500 ppm (low sulfur heating oil) in 2014 and 15 ppm (ultra-low sulfur heating oil) in 2016 for the northeast U.S. that corresponds to the MANE-VU Region. The Department based this analysis on currently available refinery studies conducted for the National Oil Heat Research Alliance (NORA) and American Petroleum Institute (API), Energy Information Agency (EIA) data, and a public health benefits study conducted by Northeast States for Coordinated Air Use Management (NESCAUM). The NORA Report concludes that as the demand for low and ultra-low sulfur fuel oil and heating oil increases, the sources of supply for low sulfur fuel oil and refining capacity will be reconfigured for greater low and ultra-low sulfur production capability. The API Report projects that sufficient supplies of low sulfur heating oil will be available to meet the demand that will be generated from the implementation of a low sulfur fuel standard in 2010 for New Jersey. The NESCAUM Report determined overall health care savings from the implementation of both low and ultra-low sulfur programs. (Public Health Benefits of Reducing Ground-level Ozone and Fine Particle Matter in the Northeast U.S., A Benefits Mapping and Analysis Program (BenMAP) Study, NESCAUM, January 15, 2008) The Department also conducted a cost-benefit analysis based on information from this report in addition to the NORA and API Reports and EIA data.

Additionally, the Department considered the study conducted by the New York State Energy Research and Development Authority (NYSERDA) and Brookhaven National Laboratories (Low sulfur Home Heating Oil Demonstration Project Summary Report, Energy Research Center, Inc., and Brookhaven National Laboratories, BNL-74956-2005-IR, June 2005 (NYSERDA Report)). The NYSEDA Report finds overall savings to consumers in terms of reduced heating equipment service and maintenance costs from using low sulfur heating oil.

## **The NORA Report**

The NORA Report analyzes the availability of and the cost to produce low sulfur heating oil in 2012, and ultra-low sulfur heating oil in 2018, to supply the demands of the northeast U.S. market. The report analyzes availability of low sulfur heating oil as of 2012 because that was the targeted implementation date of the low sulfur heating oil program within the inner zone of the MANE-VU region (New Jersey, New York, Delaware and Pennsylvania, or portions thereof). The targeted implementation date for the first phase of the program for the outer zone of the MANE-VU region was 2014. The entire MANE-VU region was targeted to require the use of ultra-low sulfur heating oil by 2018. The NORA Report focuses on the supply and demand of the northeast U.S. heating oil market, because this area corresponds to the entire MANE-VU region that will be affected by both the low and ultra-low sulfur programs.

The NORA Report indicates that there will be a major shift to ultra-low sulfur distillate by 2012 in the Atlantic Basin region, of which the eastern portion of the U.S. is a part. By 2012, approximately 76 percent of distillate in the Atlantic Basin region will be low or ultra-low sulfur, up from 48 percent in 2006. By 2018, 86 percent of Atlantic Basin distillate oil will be 50 ppm or less.

Similarly by 2018, 94 percent of the northeast U.S. distillate will be ultra-low sulfur according to the NORA report. Therefore, most suppliers will be marketing all or predominantly ultra-low sulfur distillate. This is mainly because the on-road and non-road diesel conversions to ultra-low sulfur were completed more than five years earlier and adequate notice of the heating oil market conversion to ultra-low sulfur distillate will be provided to suppliers. Hence, the NORA Report believes that supplying the additional ultra-low product will not place a significant strain on the northeast U.S. heating oil market. Based on this conclusion, the available supply in 2014 and 2016 will meet the demand of New Jersey.

The NORA Report points out the possibility that the availability of low sulfur fuel may be constrained at the beginning of 2012, because Federal mandates for non-road mobile sources to use ultra-low sulfur fuel oil in the U.S. will cause a rapid, short-term

shift to ultra-low sulfur fuels. In consideration of this possibility, the Department proposes to implement the low sulfur fuel standard in 2014 instead of in 2012, to provide the refineries sufficient time to make modifications to increase distillate production to meet this demand.