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RESIDENTIAL WOOD COMBUSTION EMISSIONS INVENTORY DEVELOPMENT FOR THE MANE-VU REGION – PHASE III

MAY 2004

PURPOSE: Emissions from residential wood combustion are a significant source of primary fine particle emissions. The Emissions Inventory Improvement Program (EIIP) recommends conducting a survey to obtain information about the amount of residential wood combustion. MARAMA is managing a project to conduct a survey and develop an improved emissions inventory for residential wood combustion for the Mid-Atlantic-Northeast Visibility Union (MANE-VU).

The project addresses residential wood combustion from home fireplaces, woodstoves and other wood burning sources for both rural and urban residents. Phase I of this project, completed in July 2001, produced a work plan for conducting surveys, including survey instruments and sampling designs. In Phase II, completed in January 2003, the contractor tested the survey instrument, designed the survey and provided information to post on the MANE-VU website to help answer questions of those surveyed.

In Phase III, started in February 2003, the contractor conducted the full survey and is preparing an improved emission inventory. The survey was categorized by geographic locations based on high, medium and low heating degree days (HDD); suburban, urban or rural classifications; and housing type (single family or other). Based on the survey responses, a multivariate model was created to estimate emissions from this source based on location, housing type, and HDD zones.

SCHEDULE: Several technical memoranda are available on the MARAMA website at www.marama.org/visibility/#reports. The project will be complete in May/June 2004. A draft inventory will be available in April 2004.

TECHNICAL OVERSIGHT COMMITTEE: David Fees of Delaware, Andy Bodnarik of New Hampshire, John Kent of New York, Nancy Herb of Pennsylvania, and Megan Schuster and Susan Wierman of MARAMA

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RESULTS: The total annual PM_{2.5} emission estimates developed for the MANE-VU region for indoor residential wood burning equipment are 145,693 tons compared to the NEI estimate of 77,393 tons. MANE-VU's estimates include more equipment types than the NEI (furnace/boilers and pellet stoves).

Also, most respondents to the MANE-VU survey burned hardwood species; therefore a wood consumption conversion factor of 1.8 tons/cord was developed and used. The NEI uses a factor of 1.163 tons/cord. This high use of hardwood species shows a regional characteristic of residential wood combustion.

This survey also included questions on outdoor wood burning equipment. This is the first survey and emissions inventory to include outdoor equipment. The total annual PM_{2.5} emission estimates for outdoor equipment are 8,549 tons.