MARAMA

Mid-Atlantic Regional Air Management Association, Inc.

2011 & 2012 ANNUAL REPORT

Meeting Air Quality Challenges

A voluntary association of ten state and local air pollution control agencies, MARAMA strengthens the skills and capabilities of member agencies and helps them work together to prevent and reduce air pollution impacts in the Mid-Atlantic Region.

This report highlights our accomplishments from October 2010 through September 2012.

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Diesel Project Awards and Media Highlights

MARAMA received grant funds under the American Recovery and Reinvestment Act (ARRA). Begun in July 2009, the MARAMA ARRA Grant – with a mix of diesel retrofits, repowers, and replacements with partners in Maryland, Pennsylvania, and Virginia—wrapped up two years later with a few changes to the partner and project mix, lasting emission reductions in areas facing real air quality challenges, positive media and industry attention, and lessons learned about the nature of managing subgrants with state and local government and private industry partners operating with tight and uncertain budgets. Although the path was not always easy, MARAMA worked throughout with project partners and EPA project managers who were dedicated to seeing the projects succeed and resourceful with ideas to bring about the successes. Below is a sampling of the awards and media spotlights the MARAMA ARRA projects received:

Environmental Achievement: The City of Alexandria, Virginia, recognized the Alexandria Transit Company's project to replace diesel buses with hybrid electric/diesel buses as one of Alexandria's Top Ten Environmental Achievements for 2011.

Environmental Initiative: Annapolis' *Patrol Boat One* was exhibited by Metalcraft Marine (the boat builder) at the International Work Boat Show in New Orleans during November 2011, where the project, which repowered the boat from diesel to electric/battery/diesel, was awarded second place in the Environmental Initiative category.

Low-emissions Locomotive Debut: CSXT's switch locomotive – with its cleaner, more efficient multi-engine genset replacing the single, pre-regulation engine – shared the stage with EPA Administrator Gina McCarthy and then-Maryland Department of the Environment (MDE) Secretary Sheri Wilson during a joint CSXT/EPA/MDE/ Maryland Department of Transportation press event. The Baltimore Sun highlighted both the project and the press event in an article (Michael Dresser, "CSX introduces low-emissions locomotive: New clean-diesel engine to be put to work in Curtis Bay yard," October 26, 2010, *The Baltimore Sun*.

Smart, Green, & Growing: Maryland's *Smart, Green & Growing* website highlighted the Maryland State Highway Administration's project to retrofit 181 dump trucks with high-efficiency diesel oxidation catalysts in the article "State Highway Administration is Clearing the Air by Reducing Diesel Emissions in Aging Trucks," April 28, 2010. In the article, Maryland Governor Martin O'Malley gives his appreciation to EPA and MARAMA for funding the project, which is consistent with his Smart, Green & Growing initiative to inspire actions for a sustainable future, and notes that the emissions reductions are accompanied by savings to taxpayers by extending the life of the State's older trucks.

Supporting the Mid-Atlantic Diesel Collaborative

In FY 2011 and FY 2012, MARAMA's diesel program brought nearly $7.9 million in grant funding and more than $10 million in additional project partner contributions to the Mid-Atlantic Region to improve the quality of the air in which we live, work, and play.

With these grants, MARAMA helped collaborators complete an impressive number of early replacements, engine repowers, and retrofits for trucks, locomotives and boats. MARAMA also supported the Mid-Atlantic Diesel Collaborative by maintaining the Collaborative's website and publicizing quarterly conference calls. MARAMA's diesel team also worked with project partners to promote an anti-idling program in the metropolitan Washington DC region.

With EPA's award of $3.9 million in SmartWay funding, MARAMA launched the Mid-Atlantic Regional Dray Truck Replacement Program, replacing a total of 95 drayage trucks serving Mid-Atlantic ports in FY 2011 and 2012. Other grants helped reduce port air quality impacts by substituting biodiesel for regular diesel used by vessels in ports and by installing filters on 100 drayage trucks, 248 dump trucks, and 52 delivery trucks .

All of these activities were possible because of the underlying support of MARAMA member agencies and EPA Region 3 along with Mid-Atlantic Diesel Collaborative participants.

Kudos from Annapolis Harbormaster

Repowered Annapolis Harbor Patrol Boat

"Hi to all,

FOR THE RECORD..!! You couldn't get the smile off my face tonight with a hammer and a chisel...! One of my Deputies said today was the most fun he's had on this job in the four years he's worked for me.... The water taxi drivers were amazed that we could sneak-up on them.... (Grinn) They couldn't believe how noisy the boat ***isn't...!!!!!!!!!!***

We ran about three hours on diesel and four hours on battery/solar today. You all helped to make it possible.

Many Thanx!"

Captain J. P. 'Flip' Walters, Harbormaster, City of Annapolis
10/2/2011

Diesel Projects Active in FY 2011-2012

Early Replacement

- York County Virginia replaced a Tier 3 Backhoe
- Chaney Enterprises (of MD) replaced 7 cement trucks
- Owners replaced 34 dray trucks in 2011 plus 61 in 2012

Engine Repower

- Cleveland Brothers (of PA), 17 off-road equipment repowers
- CSX, Switcher Locomotive Repower
- Norfolk Tug Company, 4 tug boat auxiliary engine repowers
- K-Sea Tug Company repowered 4 engines on the tug Bering Sea
- Annapolis, MD converted patrol and pump-out boats to hybrid solar-electric-diesel power.

Engine Retrofits

- The MD State Highway Administration retrofitted 181 trucks
- Montgomery County, MD retrofitted 5 off-road engines, 41 dump trucks and 26 delivery trucks.
- Owners retrofitted 54 dray trucks in 2011 and 46 in 2012.

Fuels

- Virginia Port Authority and MAERSK, biodiesel
- James Madison University, biodiesel

Oil and Gas Exploration and Production (Marcellus Shale)

The Marcellus Shale is estimated to contain between 168 and 516 trillion cubic feet of natural gas.

The Marcellus Shale geologic formation, which underlies the Appalachian region, has recently been targeted for development to produce natural gas. The formation is estimated to contain between 168 and 516 Trillion Cubic Feet (TCF) of gas. Affected states are primarily Pennsylvania, West Virginia, New York and to a smaller extent Maryland, Virginia, and Ohio.

Geologists estimate that about 10% of the total gas reserve, or between 16.8 and 51.7 TCF, can be economically extracted. Equipment used to extract the gas releases significant quantities of air pollutants, especially nitrogen oxides (NO_X), Volatile Organic Compounds (VOC) and toxic air pollutants. Emission sources include point sources, such as compressor engines and oil/condensate tanks; intermittent sources such as well drilling and fracturing engines, and well completions; gas processing; and fugitive emissions from production and transmission.

In 2010 MARAMA initiated a state coordination group to understand the impact of oil and gas exploration and production on air quality. Working together and with EPA, this group continues to share best practices and techniques for estimating emissions from oil and gas development.

Estimating Future EGU Emissions

The Eastern Regional Technical Advisory Committee (ERTAC) began developing a tool to predict growth in emissions from electrical generating units (EGU). This project is a collaborative effort among the Northeastern, Mid-Atlantic, Southeastern, and Lake Michigan area states, industry representatives, and regional organizations.

States found previous predictions inconsistent with other available information. Therefore, state and regional staff began developing an alternative method to estimate future year EGU emissions. The ERTAC Growth Committee was formed to develop an alternative methodology that would give states more information about and control over forecasts of future EGU emissions used in regional modeling,

The goal is a method that is easy to understand, well-documented, and flexible. The emissions estimates must account for fuel-specific generation trends and constraints for at least a 20-year projection period.

Coal-fired EGUs in Homer City, PA, Photo provided by PA DEP

Unit operations may not be grown past the installed capacity limits, and operational reserve requirements must be respected on a regional basis. The results must be robust enough to enable emission reduction strategy policy assessments.

With funding provided by OTC, LADCO and SESARM, MARAMA issued a contract to MACTEC Engineering and Consulting, Inc. (later AMEC E&I, Inc.) to obtain assistance in developing the code to implement growth and control projections. Testing and development will continue in future years, and the code will be available to states, regional organizations, and others to estimate EGU activity and emissions.

2011– 2012 Publications

National Air Quality Training Project: Professional Development Training Guide (3/30/2012)

National Air Quality Training Project: Catalog of Courses (3/30/2012)

National Air Quality Training Project: Gap Analysis Concerning Professional Competencies (2/14/2012)

MARAMA 2007/2017/2020 Modeling Emissions Inventory Version 2: Preliminary Trends Analysis (10/31/2011)

Mid-Atlantic/ Northeast Visibility Union Second Interim Report (9/01/2011)

National Air Quality Training Project: Technical Needs Training Summaries (9/01/2011)

Analysis of 2007 Emissions from Power Plants and Other Large Combustion Sources in the Mid-Atlantic and Northeastern United States (3/01/2011)

MARAMA's leadership improves the scientific foundation for regional modeling

In FY 2011 and FY 2012 MARAMA coordinated with EPA, engineering contractors, and member agency experts to update the regional emissions inventory to be used in air quality modeling. MARAMA staff worked with dedicated emissions inventory committee members to analyze version 2 and develop version 3 of the 2007 base year modeling inventory, along with estimates of future emissions, for use in regional modeling.

One of MARAMA's most important reports during this time supports the importance of considering hourly emissions along with hourly meteorological data when modeling air quality impacts.

Previous analysis by individual states have showed that emissions on days with high electricity demand can be considerably higher than on other days. To help states in the Mid-Atlantic / Northeast Visibility Union (MANEVU) area plus Virginia address policy relevant questions concerning emissions during periods of peak electricity, MARAMA published the ***Analysis of 2007 Emissions from Power Plants and Other Large Combustion Sources in the Mid-Atlantic and Northeastern United States***. This report documented the variability of emissions from electric generating units (EGUs) and other large combustion sources.

On days with high ozone pollution, NO_x emissions from EGUs tend to be high because these are usually hot days when the energy demand for air conditioning is high. Some EGUs are only needed to meet peak power demands, and this leads to higher emissions because many of these EGUs lack emission controls. MARAMA's report shows that, particularly in the Northeast and NY-NJ areas, emissions on high ozone days are increased due to the use of more residual oil, diesel, and natural gas in addition to the base load demand met mostly by coal. To improve air quality on the worst ozone days, it will be important to address those emission sources.

MARAMA completed special projects in 2012

In addition to its ongoing support for MARAMA, the Pennsylvania Department of Environmental Protection provided a supplemental grant of $75,000 to support technical studies. Work began in 2011 and concluded in June 2012. Key accomplishments included:

- A report analyzing EPA's proposed standards for Reciprocating Internal Combustion Engines (RICE rule) assessing the impact of the proposed rule in the region.
- Calculation of 2007-specific EGU emission factors needed for regional air quality modeling.
- Confirmation that in our region over 97% of 2007 NOx emissions in EPA's CAMD database were based on measured values, and substitutions were consistent with measured data, indicating the data were suitable for regional modeling.
- An analysis and recommendation that the 2011 DOE forecast be used for EGU emissions in the region in place of older forecasts that had been used for initial work.
- Conversion of data from Midwestern point sources into a format compatible with the region's air quality models.

Thanks to the support from PA DEP, these technical projects all helped improve the scientific basis for air pollution controls in the Mid-Atlantic region.

Training to Meet Member Needs

"We appreciate your flexibility and all the extra efforts to accommodate our Air Quality Team."

- Tony Manson (DE) 8/1/2011

MARAMA organized numerous training events to help member agency staff understand pollution control requirements and monitoring methods.

- Eleven in-person courses in FY 2011 plus eight in FY 2012 covered topics including control technologies and requirements, source sampling and monitoring, air quality modeling, permit writing, advanced inspection techniques, and enforcement case development and resolution.
- Each year, seven webinars and four workshops provided up-to-date and advanced training opportunities. Topics for these events included air quality monitoring and data analysis, risk communication, advances in pollution control technology, new requirements for greenhouse gas permitting, and requirements for new source review and prevention of significant deterioration of air quality. Introductory webinars reviewed Clean Air Act requirements and the principles of meteorology.
- MARAMA also provided travel support to enable members to attend key national or regional conferences or meetings. Forty-seven members received support to attend eleven events in FY 2011 and 103 members attended eighteen events with MARAMA support in FY 2012.

The numbers below represent total agency participants for all MARAMA events during FY 2011 and 2012. The numbers fluctuate year to year depending on training needs, courses offered, and travel restrictions.

	2011	2012
Allegheny County	23	25
Delaware	38	65
District of Columbia	13	12
Maryland	103	108
New Jersey	35	41
North Carolina	8	24
Pennsylvania	123	74
Philadelphia	42	46
Virginia	85	55
West Virginia	12	27

MARAMA Webinars

MARAMA has embraced webinars as a 'green' training tool

Travel restrictions and uncertainties in federal agency budgets continued to challenge MARAMA's training program to find new ways to identify and meet training needs. Since MARAMA first introduced them in 2010, webinars have become an important way for MARAMA to train large numbers of member agency staff at a fraction of the cost of traditional in-person training courses. MARAMA has embraced webinars as a "green" training tool not only because there is no travel or hotel costs for attendees or presenters, but because webinars are able to attract participants equally without regard to travel distances.

MARAMA held seven webinars in FY 2011 and seven in FY 2012. Webinar participants were engaged through the use of colorful slides, audio, and the interactive ability to ask questions of the speakers. Our most popular webinar was "Engine Control Technologies" which had over 250 participants (including many state and local agency staff not in MARAMA). Our "Development of a Marcellus Shale Emissions Inventory" and "Introduction to the Clean Air Act" webinars were also very popular, with over 100 participants each.

New Professional Development and Training Resources

At the request of the National Training Committee, EPA awarded MARAMA a special purpose grant to develop a new guide to the air quality curriculum provided by the EPA Office of Air and Radiation and associated partners. The Curriculum Guide project resulted in the preparation of several useful reports:

- The ***Course Catalog*** for the first time organized easily accessible descriptions of all of EPA's Air Pollution Training Institute (APTI) courses as well as courses developed for EPA by the California Air Resources Board (CARB).
- The ***Technical Training Needs*** report identified training needs for ten functions commonly found in air pollution control programs: introduction to air pollution control, ambient air quality monitoring and data analysis, emissions estimation, air quality modeling and forecasting, planning and regulation development, permit writing, inspection and enforcement, requirements for toxic/hazardous air pollutants, mobile sources, and climate change.
- The ***Gap Analysis*** report identifying training needs that are not met by existing APTI or CARB courses and identified other training courses that might help fill the gaps.
- The Final ***Professional Development Training Guide*** recommended training for functional areas commonly found in air quality agencies.

EPA used the information from these reports in designing a **new learning management system called APTI-Learn**, which provides information on when and where the APTI and CARB courses are being offered, allows students to register on-line for in-person or self-instructional courses, provides tools for instructors to manage course administration, and suggests courses for students depending on the functional areas in which they work.

2011-2012 Outstanding Service Awards

MARAMA's success depends on collaborative efforts by staff from member agencies. Each year MARAMA Air Directors present awards to recognize those individuals whose contributions have been outstanding.

In 2011, MARAMA awarded two Outstanding Service awards. MARAMA recognized David Fees of Delaware for his outstanding contributions to regional emissions inventory development and coordination.

Also in 2011 MARAMA recognized Doris McLeod of Virginia for her outstanding technical and communication support in developing collaborative inter-regional methods to estimate emissions from electricity generating units.

MARAMA awarded the 2012 Outstanding Service award to Jin-Sheng Lin of Virginia for his excellent work in helping debug EPA's new MOVES model for estimating Mobile Source Emissions and in supporting an inter-regional effort to improve forecasts of emissions from electricity generation.

MARAMA greatly appreciates the outstanding work by David, Doris, and Jin. Thank you!

David Fees of Delaware received the 2011 MARAMA Outstanding Service Award

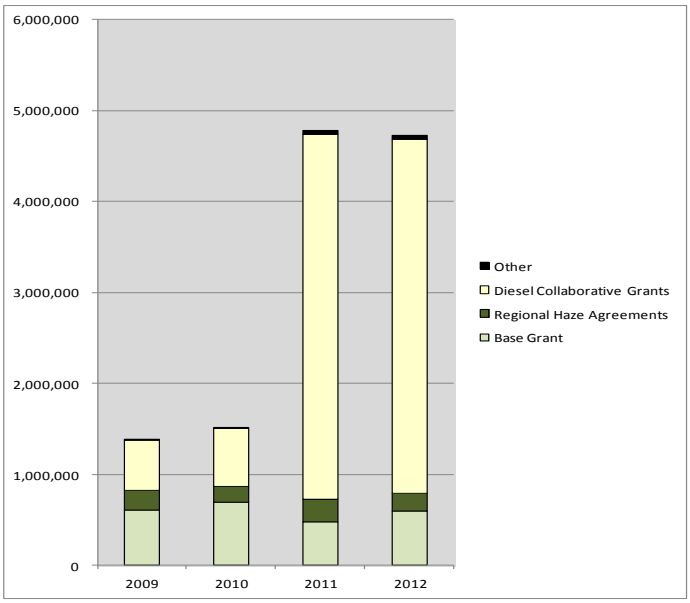
Doris McLeod of Virginia received the 2011 MARAMA Outstanding Service Award

Jin-Sheng Lin of Virginia received the 2012 MARAMA Outstanding Service Award

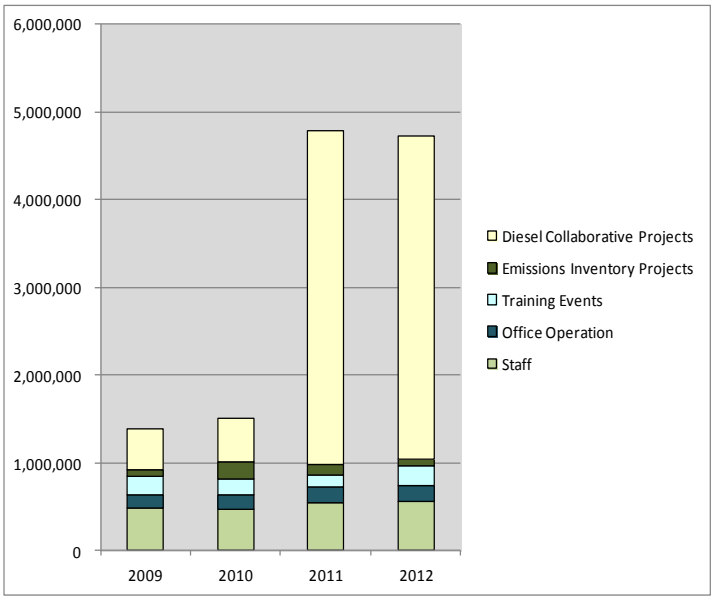
Discussion of Revenue and Expenses

MARAMA's support for diesel emission reduction projects dominated revenues and expenses in FY 2011 and 2012. Diesel technology deployment was supported by grants to MARAMA from the US Environmental Protection Agency under EPA's Clean Diesel program. Costs for staff salaries and office operation grew slightly. Costs for training events over the two years were similar to past levels, but funds spent on technical studies declined after regional haze studies were completed.

Revenue



Expenses



Staff Comings and Goings

MARAMA's staff increased by one during a period of expanding diesel grants and active emissions inventory development. In 2011 MARAMA sadly bid goodbye to our first Mobile Sources Program Manager, Susan Stephenson, who helped organize the Diesel Collaborative, and to Patrick Davis, our long time data analyst and program manager. Rick Gordon took on the role of Mobile Sources Program Manager in April 2012.

MARAMA also welcomed two other new staff members during this period. Debbie Thomas joined us in January 2011 to manage the Dray Truck Replacement Project and assist with other diesel projects. Abigail Vickers began work on emissions inventory projects in June 2011, making a total of two employees leaving and three starting.

Board of Directors, 2011-2012

Cecily M. Beall, District of Columbia, Chair 2011
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George S. "Tad" Aburn, Jr., Maryland
John A. Benedict, West Virginia
Joyce E. Epps, Pennsylvania
Sheila Holman, North Carolina
Ali Mirzakhalili, Delaware
William O'Sullivan, New Jersey

MARAMA Staff, 2011-2012

Susan S.G. Wierman, Executive Director
Hannah P. Andrews, Office Manager
Patrick W. Davis, Environmental Specialist & Mobile Sources Mgr.
James "Rick" Gordon, Mobile Sources Manager
Alice R. Lutrey, Training Coordinator
Susan A. McCusker, Environmental Scientist
Julie R. McDill, P.E., Sr. Environmental Engineer
Susan S. Stephenson, Mobile Sources Manager
Deborah L. Thomas, Diesel Project Manager
Abigail D. Vickers, Environmental Scientist

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