MARAMA Mid-Atlantic Regional Air Management Association

WORK PLAN

EMISSION INVENTORY DEVELOPMENT FOR REGIONAL AIR QUALITY MODELING IN THE MID-ATLANTIC / NORTHEAST STATES

Prepared for:

Mid-Atlantic Regional Air Management Association Mid-Atlantic /Northeast Visibility Union Ozone Transport Commission

Updated by MARAMA January, 2011

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January, 2011 3583-09-6694.01

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1. INTRODUCTION

This document describes the work planned in order to develop a regional emission inventory for air quality modeling in the Northeast / Mid-Atlantic States¹. The emissions inventory covers the states who are members of the Ozone Transport Commission (OTC), including the entire Commonwealth of Virginia. In this document, this region will be referred to as the MANE-VU+VA region. With the assistance of technical contractors, the Mid-Atlantic Regional Air Management Association (MARAMA) is developing the regional emissions inventory in coordination with the OTC member states, the Northeast States for Coordinated Air Use Management (NESCAUM), and the staff of the Ozone Transport Commission (OTC). Development of specific sections of the inventory may be funded by grants from the U.S. Environmental Protection Agency (USEPA). Preparation of this document was funded by OTC's grant XA973181 through an MOA with MARAMA.

The regional inventory will be used in air quality modeling to concurrently address national ambient air quality standards (NAAQS) requirements for ozone and fine particles. It is anticipated that the regional inventory will also be used to evaluate progress towards long-term regional haze goals. Because similar pollutant emissions and atmospheric processes control the chemical formation and transport of fine particles, ozone, and regional haze, similar technical analyses are necessary to evaluate air quality benefits of emissions controls. The emissions inventory will support a single integrated, one-atmosphere air quality modeling platform used to support state air quality attainment demonstrations.

Emissions inventories will be prepared for 2007, 2013, 2017, and 2020. The 2007 inventory will be used for model validation. The 2013 inventory will support attainment demonstrations for fine particulate matter standards. The 2017 and 2020 emissions inventories will support attainment demonstrations for ozone standards.

The purpose of this work plan is to identify the specific approach to estimating emissions for each source sector; to define the data needed to quantify emissions; to delineate the responsibilities of project participants; to establish the schedule for data

¹ This plan is a "living document" which has undergone several revisions as it guided the inventory development process. The final work plan was developed based on comments received from US EPA and the states on two previous versions. Draft plans served to guide the ongoing inventory development.

submittals, processing, and review; and to define the deliverable products for contractor assistance in helping to assemble the 2007 and future year inventories. A separate quality assurance project plan (QAPP) has been developed to guide the process for ensuring that the inventories are complete, reasonable, and consistent.

To develop the regional emissions inventory in time to support planned regional modeling, MARAMA required the assistance of technical expert contractors. Based on a competitive process, MARAMA selected contractors from MACTEC and Alpine Geophysics (called the MACTEC team) for initial work. Given the scope of the project, MARAMA also plans to use a second competitive process to select a contractor for further assistance.

The MACTEC team developed two drafts of this work plan, and MARAMA provided additional edits to address comments received on the draft from USEPA and OTC member states. Schedules have been adjusted to reflect progress to date and anticipated future progress

1.1 Project Participants and Roles

Numerous organizations will be involved in the planning, development, review, and approval of the 2007 and future year emission inventories. The general roles of the participants who will be developing the inventory are:

- State Emission Inventory Personnel States control their emissions inventory by
 developing and submitting emissions or model inputs needed to develop the 2007
 inventory; providing population, employment, model inputs or other data needed to
 backcast/forecast data; and providing information of future control programs.
 States also determine how to respond to comments from stakeholders; provide
 responses to quality assurance concerns; and review and approve intermediate and
 final work products.
- MARAMA MARAMA staff members manage contracts; seek timely input from State agency emission inventory personnel; and coordinate with State agency management, other regional planning organizations, USEPA, emission modeling and quality modeling personnel, and stakeholders. MARAMA will hire contractors, establish work orders for specific tasks under the contracts, and provide quarterly reports to grantors and States. A list of current and anticipated work orders is provided in Section 11.
- Contractors or MARAMA staff Technical experts will assemble existing emission inventories prepared by States, USEPA, and MARAMA; develop

emissions inventories based on input data provided by the States; adjust inventories as needed to represent 2007; forecast emissions for future years to account for growth and future control programs; perform extensive quality assurance; prepare data files in a format required by the emission modelers; and prepare data summaries and technical support documentation.

Contractors will participate in periodic conference calls with MARAMA. They
will monitor the project schedule and budget, and provided timely notification to
MARAMA of schedule significant slippage. Following commencement of work
orders contractors will prepare monthly progress reports for submission to
MARAMA.

Other project participants (State agency management, emission and air quality modelers, OTC staff, other regional planning organizations (RPOs), USEPA, and stakeholders) will be involved in the planning, review, and approval of the 2007 and future year inventories. Appendix A is a list of project participants organized by inventory sector.

1.2 General Approach – 2007 Emissions Estimates

In general, the 2005 and 2008 periodic inventories that States have already prepared or will soon be preparing provided the initial basis for developing the 2007 modeling inventory for the MANE-VU+VA region. In cases where the States do not have the required inventory data for 2007, or cannot provide the data in accordance with the project schedule, an alternative approach will be used, generally relying on USEPA's 2005 or 2008 National Emission Inventory (NEI). The MACTEC team is tasked with assembling and processing these inventories into the data formats required by the SMOKE emissions model. The following general processes will be completed:

• States will prepare and submit point source emission inventories for 2007, area source emission inventories for 2005, 2007, or 2008; and inputs to mobile source and (in some cases) area source emission models. The primary format for the point source inventory data submittals will be the NEI Input Format (NIF) version 3.0. The inventories may be submitted as ACCESS databases, text files, EXCEL spreadsheets, or XML files so long the files adhere to the NIF 3.0 file structures. The preferred format for the area source inventories is NIF 3.0, but other formats will be accepted as long as the alternative format is clearly defined. Inputs for mobile source models must adhere to the formats required by MOBILE6, NMIM and MOVES as appropriate.

- The MACTEC team will perform an initial QA/QC check of each submittal regarding data formats and completeness. QA/QC concerns will be forwarded to the States for resolution.
- The MACTEC team will assemble each State submittal into a common format.
- In some limited cases, the MACTEC team will augment the State submittal to add pollutants not included in the State submittal or to calculate emissions. THE MACTEC team will estimate certain nonroad emissions using the NONROAD / NMIM model.
- The MACTEC team will provide the 2007 annual emission inventory and documentation for point, area, and nonroad sources to the States, MARAMA, and stakeholders for review and approval. Onroad emissions will be calculated by State emission modelers and/or NESCAUM. It is anticipated that New York, Pennsylvania, and Virginia will run the MOVES model for their respective counties; NESCAUM will run the MOVES model for other States.
- Upon State and MARAMA approval, the MACTEC team will perform a series of
 emission processing activities to prepare SMOKE-ready input files for the nonEGU
 point, area, and nonroad sectors for use by SMOKE emission modelers. The
 MACTEC team will also prepare data summaries and technical support
 documentation for the 2007 inventory for all source sectors except onroad mobile
 sources.

1.3 General Approach – Future Year Emissions Estimates (Future Base Case/ On the Books)

MARAMA has obtained guidance from the OTC Air Directors concerning which future years are needed. The year 2013 was chosen for attainment demonstrations for PM2.5, and 2017 and 2020 for ozone attainment demonstrations. The first effort will be to estimate future emissions with growth, and then to apply emissions controls that are or will be "on the books" by the date of the future inventory. Different approaches will be used for the different source sectors.

• The 2007 inventory will serve as the starting point for projecting emissions for the nonEGU point, area, and marine vessels/aircraft/railroad locomotives (referred to as M/A/R) sectors. States will prepare and submit population, employment, fuel use and other data needed to forecast emissions for three future years. If States cannot supply growth factors, the MACTEC team will use the Department of

Energy's *Annual Energy Outlook*, or other readily available data to develop growth factors for each source category. The MACTEC team will assemble control factors for post-2007 "on-the-books" controls resulting from national rules. States will provide information to prepare control factors for post-2007 State-specific rules, enforcement actions, or permit limitations for nonEGU point and area source categories. The MACTEC team will use the growth and control factors to forecast emissions for three future years for the "on-the-books" control scenario.

- MARAMA will work with other regional and state agencies on the Eastern
 Regional Technical Advisory Committee (ERTAC) to prepare estimates of future
 emissions from the EGU sector. MARAMA may select and use a contractor to
 provide assistance in documenting the emissions inventory for this sector or to
 augment the results of the ERTAC process.
- MACTEC will use the NMIM/NONROAD model to forecast future emissions for certain categories of nonroad sources that are included in the NONROAD model.
- Future onroad mobile source emissions will be forecast using the MOVES model
 by the OTC modeling centers. MARAMA will gather input data from the states.
 Because the mobile source emissions will likely be prepared later than other
 emissions, documentation may be prepared separately, and MARAMA may use the
 assistance of a contractor to assist in preparing emissions summaries and
 documentation for the region.
- Upon State and MARAMA approval, the MACTEC team will perform a series of emission processing activities to prepare SMOKE-ready input files for the nonEGU point, area, and nonroad sectors for use by SMOKE emission modelers.
- The MACTEC team will prepare data summaries and technical support documentation for all source sectors that MACTEC prepared. MARAMA will coordinate preparation of documentation for other sectors, possibily with contractor assistance.

1.4 General Approach – Additional Work Elements

In order to conduct air quality modeling to predict pollutant concentrations within the MANE-VU+VA region, modelers require emissions estimates for sources outside the region that affect the region. The OTC modeling protocol identifies the modeling domain and other information about the modeling platform. In general, emissions inventory data is needed for certain areas in Canada and the entire eastern US. This will necessitate

obtaining information for 2007, 2013, 2017, and 2020 from the Canadian government or Canadian Provinces, the Lake Michigan Air Directors Consortium (LADCO), and the Southeast States Air Use Management (SESARM).

In addition, to predict the air quality impacts of additional control measures included in State Implementation Plans (SIPs), emissions inventories including these "beyond on the way" controls are needed for the future years (2013, 2017, and 2020).

Some additional tasks needed to complete regional emissions inventory development will be covered by a new contract, due to the limited scope of MARAMA's contract with MACTEC. These tasks may be performed by the MACTEC team, in-house staff, or another contractor selected in accordance with MARAMA's policies and procedures.

- If necessary MARAMA will seek to obtain Canadian emissions inventory information from the USEPA and/or from Canadian national or provincial government sources. MARAMA may require the assistance of a contractor to adjust the inventory to represent appropriate years and to develop the inventory data in a format required for use in modeling. OTC modeling centers may rely on the data available from the US EPA, in which case MARAMA would not need to perform this task.
- Future Control Case / Alternative Emissions Control Strategies
 - o MARAMA will obtain information from the OTC and the States to identify alternative emission control strategies needed for SIP development. MARAMA will work with a contractor to develop control factors for alternative emission control strategies. The contractor will apply these control factors to develop future year inventories for the selected control strategies.
 - Upon State and MARAMA approval, the contractor will perform a series of emission processing activities to prepare SMOKE-ready input files and submit these files to the emission modelers.

The contractor will prepare future year data summaries and technical support documentation suitable for inclusion in SIPs.Detailed procedures for specific activities are discussed in the remainder of this document.

2. POINT SOURCE ANNUAL INVENTORY

2.1 Annual 2007 Inventory for CAMD Reporting Point Sources

The USEPA's Clean Air Markets Division (CAMD) implements Volume 40 Part 75 of the Code of Federal Regulations (CFR), which requires an hourly accounting of the emissions from each source participating in an emissions cap and trade program under the Acid Rain Control Program, the NOx Budget Trading Program, or the Clean Air Interstate Rule. Continuous emission monitoring systems (CEMS) are used generally used to provide the emissions data unless the unit qualifies to use one of the alternative monitoring methodologies specified in the rule. With few exceptions, the alternative methodologies apply to oil-fired and gas-fired units. The Part 75 rule generally requires the use of CEMS for units that combust coal or other solid fuel(s). In order to develop an accurate inventory of actual 2007 emissions, MARAMA will use these hourly emissions data in conjunction with other information.

The approach is to use the 2007 hourly emissions data and other CAMD emissions reports for sulfur dioxide (SO2) and oxides of nitrogen (NOx) emissions and add emissions for other pollutants using either default emission factors or data supplied by the States. MARAMA compiles the 2007 CAMD reported data. Initially, the States will review 2007 data from the CAMD hourly emissions database. States will link source IDs in the CAMD database with source IDs in their emission inventory system. States will provide a complete 2007 emission inventory for both CAMD and non-CAMD sources in a standard format (i.e., NIF 3.0). MARAMA will provide the reviewed CAMD data to the MACTEC team, who will perform QA checks, augment the particulate matter (PM) emissions, and prepare the NIF files.

Actions for 2007 Emissions from Point Sources that Report Hourly Emissions to USEPA CAMD	Completion Date
MARAMA compiles the 2007 hourly data from CAMD, develops an initial crosswalk that matches the unit identifiers with the identifiers in the State database, and submits the crosswalk to States for review.	5/19/09
States review the 2007 CAMD data and the crosswalk and (1) fill in the missing ID's to ensure that a large number of the units in the state inventory are matched with the CAMD database, (2) review NOx and SO2 CEM emissions, (3) provide emissions for other pollutants, and (4) review and correct stack data as necessary.	7/15/09
The MACTEC team updates the State's NIF databases with the data in the CAMD/NIF crosswalk and perform an initial series of QA checks on data format, potential double counting with nonCAMD point	8/1/09

Actions for 2007 Emissions from Point Sources that Report Hourly Emissions to USEPA CAMD	Completion Date
source inventory, unmatched facilities in 2002 inventory, large changes in emissions between 2002 and 2007, consistency with CAMD data and potentially missing sources. The MACTEC team return draft CAMD inventory with initial QA concerns to the States and MARAMA resolution and additional QA.	
The States revise data files based on the initial series of QA checks and provide a response to the MACTEC team.	8/24/09
The MACTEC team estimates PM emissions for EGU sources based on the augmentation factors previously developed for MANE-VU (Documentation of 2018 Emissions from Electric Generating Units in the Eastern United States for MANE-VU's Regional Haze Modeling; April 2008). For condensable PM2.5 emissions the factors developed for MARAMA will be used to augment the files (Emissions Factors for Condensable Particulate Matter Emissions from Electric Generating Units; August 20, 2008.)	9/30/09
The MACTEC team provides States with a second series of QA reports that incorporates State responses to the initial QA checks, provides an updated CAMD/NIF crosswalk, and provides the results of the PM augmentation.	9/23/09
States return review 2nd round of QA checks, CAMD/NIF crosswalk, PM augmentation and provide comments and corrections.	10/02/09
The MACTEC team prepares draft documentation for this sector, makes revisions to data files, and submits revised CAMD/NIF crosswalk, NIF files, summary tables, and draft documentation to MARAMA.	10/06/09
MARAMA posts the inventory on a website and send notification to USEPA and stakeholders for downloading.	10/06/09
MARAMA facilitates a conference call to discuss the inventory with States and stakeholders.	10/21/09
Stakeholders provide comments to MARAMA and States.	11/04/09
States provide the MACTEC team with final revisions based on additional State review and stakeholder comments.	11/13/09
The MACTEC team makes final revisions to NIF inventory and documentation and submits data files to MARAMA.	4/20/10

2.2 Annual 2007 Inventory for Other Point Sources

For sources not included in CAMD's hourly emissions database, the preferred approach is to use the 2007 major point source emission inventory supplied by the States. Major point sources will typically include those that have been issued Title V air permits. The point source inventories can be submitted as ACCESS databases, text files, EXCEL spreadsheets, or XML files so long the files adhere to the NIF 3.0 file structure. The MACTEC team will perform QA checks, augment the PM emissions, and prepare NIF files.

2007 Inventory Actions for Other Point Sources	Completion Date
State point source inventory personnel coordinate with State area source personnel to (1) ensure that the emissions from sources below the point source cutoff are added to the area source inventory, (2) that fuel use in the point source inventory is subtracted from fuel use totals when calculating the emissions for area source I/C/I boilers, and (3) that employment in the point source inventory is subtracted from employment totals for those industrial/commercial area source categories where emissions are calculate on a per employee basis.	7/15/09
States provide point source emissions inventory for 2007 in NIF format.	7/15/09
The MACTEC team performs an initial series of QA checks on data format, database referential integrity, potential double counting with EGU inventory, unmatched facilities in 2002 inventory, and large changes in emissions between 2002 and 2007. The MACTEC team provides initial QA concerns to the States for resolution.	8/1/09
The States make revisions to data files based on the initial series of QA checks and provide a response to the MACTEC team.	8/24/09
The MACTEC team will analyze the PM emissions data submitted by the States and augment the data as necessary to ensure that all PM species (e.g., PM10 and PM2.5 primary, filterable, and condensable fractions) are included.	9/30/09
The MACTEC team will provide States with a second series of QA reports that incorporates State responses to the initial QA checks, and provides the results of the PM augmentation.	9/30/09
States review 2nd round of QA checks and results of PM augmentation and provide comments and corrections.	10/02/09
The MACTEC team prepares draft documentation for this sector, make revisions to data files, and submit NIF files, summary tables, and draft documentation to MARAMA.	10/5/09

2007 Inventory Actions for Other Point Sources	Completion Date
MARAMA sends inventory and draft documentation to USEPA and stakeholders for comments.	10/5/09
MARAMA facilitates a conference call to discuss the inventory with States and stakeholders.	10/21/09
Stakeholders provide comments to MARAMA and States.	11/03/09
States provide the MACTEC team with final revisions based on additional State review and stakeholder comments.	11/13/09
The MACTEC team makes final revisions to NIF inventory and documentation and submits data files to MARAMA.	4/20/10

2.3 Future Year Inventory for EGU Point Sources Reporting to CAMD

The OTC states after careful consideration decided to work with other states and regions through the Eastern Regional Technical Advisory Committee (ERTAC) to develop a method for forecasting future emissions of EGUs that reflected the best available information. The OTC states do not have sufficient resources to use the proprietary Integrated Planning Model (IPM®) that USEPA uses in its national air quality modeling work. Further, the SIP process requires a unit-level forecast, while the IPM model is designed to produce a regional forecast. More information about the ERTAC methodology will be provided in a separate document.

MARAMA will select a contractor to provide assistance in using the results of the ERTAC process to support the regional modeling effort. MARAMA will also review the results of any special IPM modeling conducted by USEPA for the Eastern US for relevant time periods as to whether it may be helpful in developing future emissions forecasts for EGU sources. The OTC States will make the final decision as to which future emissions to use in the regional modeling inventory.

New SIP controls required to demonstrate attainment may not be developed under this task. The States will be able to identify these controls after reviewing the modeling results of the 2007 and On-the-Books Future Base Case scenarios. The approach for developing the alternative future emissions control strategies and emission scenario is discussed in Section 9 of this Work Plan.

Actions for Future Year for EGU Point Sources that Report Hourly Emissions to USEPA CAMD	Completion Date
States select future years for modeling.	Spring 2010
MARAMA assists states in participating in ERTAC process, including managing contract for software development	2010-2011
MARAMA assists states in reviewing results of ERTAC work, determining needed contractual assistance to prepare inventory for modeling, and comparing the ERTAC forecast with available USEPA IPM runs.	January – June, 2011
The States review the projections and provide comments on the results.	Summer 2011
MARAMA or contractor revises the inventory and documentation	Fall 2011
MARAMA posts the inventory on a website and send notice of the EGU projections to USEPA and stakeholders for comments.	Fall 2011
MARAMA facilitates a conference call to discuss the inventory with States and stakeholders.	Fall 2011
Stakeholders provide comments to MARAMA and States.	Fall 2011
States provide MARAMA with final revisions based on additional State review and stakeholder comments.	Fall 2011
Contractor makes final revisions to NIF inventory and documentation and submits data files to MARAMA.	Fall 2011

2.4 Future Year Inventory for Other Point Sources

The MACTEC team will use the latest state-of-knowledge growth and control factors. Growth projections will be obtained from USEPA's data from the USEPA-2005-based modeling platform, and the *Updated Annual Energy Outlook 2010 Reference Case Reflecting Provisions of the American Recovery and Reinvestment Act and Recent Changes in the Economic Outlook* (AEO2010). Some States may elect to obtain State-specific growth factors for key industries in their States to use in lieu of the USEPA/AEO2010 growth factors, either from their State economic planning agencies or from industry stakeholders. The MACTEC team will compile available growth factors into an easy-to-review spreadsheet and prepare a Technical Memorandum describing the available data.

With respect to control factors, the MACTEC team will assemble data for post-2007 national controls from the USEPA-2005-based modeling platform and post-2007 State controls from the States (e.g., OTC model rules, plant or emission unit closures, facility

emission caps, and controls anticipated to be applied as a result of USEPA/State enforcement settlements, recent ozone, PM and regional haze SIPs, and other post-2007 emission control program).

Once MARAMA and the States have reviewed and approved the above work products, we will apply the appropriate growth factors and methods as directed by MARAMA. We will provide the results of the projections to the State agencies for review and approval. To facilitate State review, the projection results will be summarized at various levels of detail, for example by facility, by SCC, and by State.

Actions for Future Year for non-EGU Point Sources	Completion Date
The MACTEC team prepares an initial memorandum outlining potential methodologies and data sources for projecting emissions from nonEGUs.	9/27/2009
The States will review the projection memorandum and provide comments on the methodology, growth rates, control information, and new generating capacity.	12/31/09
The MACTEC team prepares a memorandum/spreadsheet identifying the methods and data that will be used for projecting emissions. The spreadsheet will include (1) AEO2010 growth rates for each year through 2018 by electricity market module region and fuel type; (2) 2007 control information; (3) information on post-2007 legally enforceable controls required by a Consent Decree, state rule, permit, shutdown or other planned post-2007 emission controls.	7/2/2010
The States review the projection memorandum and provide comments on the methodology, growth rates, control information, and new generating capacity.	9/17/10
The MACTEC team applies the projection methodology and data to develop EGU emission projections for three future years. Documentation of the results of the projections will be provided to States for review and comment. The MACTEC team will compare the results of the projection to recent IPM runs that are available (e.g., USEPA or NYSERDA RGGI runs) to determine that the projections are reasonable.	9/20/10
The States review the projections and provide comments on the results.	9/27/10
The MACTEC team revises the inventory and documentation	9/30/10
MARAMA posts the inventory on a website and send notice of the EGU projections to USEPA and stakeholders for comments.	Nov. 2010
Stakeholders provide comments to MARAMA and States.	Nov. 2010

Actions for Future Year for non-EGU Point Sources	Completion Date
States provide the MACTEC team with final revisions based on additional State review and stakeholder comments.	Dec. 2010
The MACTEC team makes final revisions to NIF inventory and documentation and submits data files to MARAMA.	Feb. 2011

3. 2007 HOURLY INVENTORY FOR CAMD SOURCES

This section describes the preparation and analysis of hourly emissions values for 2007 for each unit reporting hourly emissions to the USEPA CAMD in the MANE-VU+VA region. The CAMD-to-NIF cross-walk created by MARAMA and updated by the MACTEC team will be used to match unit identifiers between the 2007 annual emissions NIF inventory and the 2007 hourly CAMD emissions data. The hourly emissions files will be converted for use by the SMOKE emission modeling system.

3.1 Actual 2007 Hourly Emissions

The MACTEC team will prepare SMOKE-ready PTINV (point source annual emissions) and PTHOUR (point source hour-specific emissions) in EMS-95 format for EGUs and other point sources reporting hourly data to CAMD. The methods for preparing the PTINV and PTHOUR files vary by type of unit, as described in the following paragraphs.

3.1.1 Sources with 12-Months of Hourly Data in CAMD Database

The MACTEC team will convert the annual inventory for these units from NIF to SMOKE PTINV one-record-per-line (ORL) format. The MACTEC team will obtain the hourly 2007 emissions data in the SMOKE hour-specific format from CAMD. The MACTEC team will match the ORIS/unit ID combinations that appear in the CAMD file to sources in the annual NIF emissions input file using the cross-walk. The MACTEC team will allocate annual NIF emissions to individual hours by applying ratios based on the CAMD hour-specific NOx, SO₂, and heat input data to the NOx, SO₂, and other emissions, respectively. This will ensure that the annual emission values approved by the States are maintained and distributed to individual hours based on actual data reported to CAMD. The resulting hour-specific files will be provided in SMOKE PTHOUR EMS-95 format.

3.1.2 Sources with 6/9 Months of Hourly Data in CAMD Database

The MACTEC team will prepare PTINV ORL and PTHOUR files for these units using a two-step approach as follows:

For months when the unit reports hourly emissions (typically during the ozone season), the MACTEC team will prepare a PTINV ORL file by summing the hourly NOx and SO2 values in the CEM database. For other pollutants in the PTINV ORL file, the MACTEC team will consult with emission inventory personnel in New Jersey to develop an acceptable method for allocating annual emissions to the ozone season. To prepare the PTHOUR file for SO2 and NOx, The MACTEC team will use the hourly CEM SO2 and NOx data as reported. To develop the PTHOUR file for other pollutants, the MACTEC team will use the hourly CEM heat input data as reported to allocate the ozone season emissions to individual hours.

For those months when the unit does not report hourly emissions (typically during the winter), the MACTEC team will prepare a PTINV ORL file by subtracting the sum of the hourly NOx and SO2 values in the hourly database from the annual NIF NOx and SO2 values. For other pollutants in the PTINV ORL file, The MACTEC team will estimate the winter emissions by allocating annual emissions to the winter season by subtracting the summed ozone season emissions, from the previous step, from the annual emissions. To prepare the PTHOUR file for the winter season, The MACTEC team will apply default SMOKE temporal profiles to the winter season emissions. The MACTEC team will document which default SMOKE profiles were used and ensure that that the monthly profiles used in this step apportion all of the winter emissions to the winter months, i.e. that the monthly weighting factors are zero for the summer months.

3.1.3 Sources in Maryland with 6/9 Months of Hourly Data

Maryland has filled in the hourly data for the winter months for units that only report 6/9 months to CAMD. The MACTEC team will convert the annual inventory for these units from NIF to SMOKE PTINV ORL format. The MACTEC team will obtain the hourly 2007 emissions data from Maryland and convert the data to the SMOKE PTHOUR EMS-95 format. The MACTEC team will match the ORIS/unit ID combinations that appear in the Maryland hourly file to sources in the annual NIF emissions input file. They will then allocate the annual NIF emissions to individual hours by applying ratios based on the Maryland hour-specific NOx, SO2, and gross load data to the NOx, SO2, and other emissions, respectively. This will ensure that the annual emission values approved by Maryland are maintained and distributed to individual hours based on actual CEM data. The resulting hour-specific files will be provided in SMOKE PTHOUR EMS-95 format.

3.1.4 Distributed Generation Units in Virginia

Virginia has identified distributed generation units and developed PTHOUR files for use in allocating annual emissions to individual hours. The MACTEC team will convert the annual inventory for these units from NIF to SMOKE PTINV ORL format. They will then match the ORIS/unit ID combinations that appear in the Virginia PTHOUR file to sources in the annual NIF emissions input file to ensure that all units are linked correctly.

3.1.5 SMOKE File Data Quality Assurance

The MACTEC team will prepare quality assurance reports to verify the matching of NIF and CAMD units, confirming that annual NIF emissions are consistent with the sum of hourly values, and checking for missing hourly data and other checks as needed. The MACTEC team will coordinate with MARAMA and States to resolve quality assurance issues.

3.2 Classification of EGUs to Support Data Analysis

MARAMA will work with the States to classify EGUs into various bins to facilitate reporting and analysis. A classification scheme was developed by MARAMA based on unit utilization in 2007. Units were binned into three categories as follows:

- Operating 50% or more of possible hours
- Operating between 15 and 50% of possible hours
- Operating less than 15% of possible hours.

The MACTEC team will use the classifications contained in the resulting table from MARAMA to add flags to the NIF tables to properly classify EGUs in each State. The MACTEC team will document the methods used to assign EGUs to various classification bins.

3.3 Analysis of Hourly Data

The MACTEC team will prepare a series of data analyses to show the variability of hourly emissions by time period (by season, episode, day, hour), type of fuel (coal, oil, natural gas) and type of unit (e.g., base-load, load-following). MARAMA will specify the types of analyses to be completed. These analyses would be similar in nature to those prepared previously by Connecticut and New Jersey based on the 2005 CAMD data.

3.4 Documentation

The MACTEC team will prepare documentation describing the methods, data and results of the hourly emissions development process, which will be submitted to States for review and approval for inclusion in the final Technical Support Document.

The MACTEC team will prepare a report documenting the analysis of hourly emissions within the MANE-VU+VA REGION.

3.5 Schedule

The schedule for deliverable work products and significant milestones is shown below:

Actions for Hourly Emissions Data Preparation and Analysis	Completion Date	
Preparation of 2007 Actual Hourly Emissions Data Files		
The MACTEC team obtains the final, State-approved annual NIF inventories, hourly data from CAMD, hourly data from MD, and PTHOUR files from VA.	2/16/10	
The MACTEC team submits draft PTINV ORL and PTHOUR files for each type of unit with hourly data and draft documentation of the methods and data used to develop the files.	3/15/10	
MARAMA provides hourly emission files and draft documentation for stakeholder review and comment.	3/16/10	
The MACTEC team provides final PTINV ORL and PTHOUR files for each of the four types of units described above and final documentation for the hourly SMOKE files.	4/15/10	
Classification of Units with Hourly Emissions Data		
The MACTEC team obtains information from MARAMA to add flags to the NIF tables to properly classify EGUs in each State.	3/15/10	
The MACTEC team documents the methods used to assign EGUs to various classification bins. Classifications will be included in the PTINV ORL and PTHOUR files unless otherwise directed by MARAMA.	4/15/10	
Analysis of Hourly CAMD Emissions		
The MACTEC team prepares draft analyses of the variability in hourly emissions and/or other analyses in response to the policy relevant questions posed by MARAMA.	6/9/10	
The MACTEC team revises the draft analyses based on comments received from MARAMA and the States and submits a 2 nd draft report.	9/15/10	

Actions for Hourly Emissions Data Preparation and Analysis	Completion Date
MARAMA provides hourly emissions analysis to stakeholders for review and comment.	10/1/10
The MACTEC team revises the 2 nd draft analyses based on comments received stakeholders and direction provided by MARAMA. The MACTEC submits a final report on the analysis of hourly emissions from EGUs and other large point sources.	11/30/10

4. ONROAD MOBILE SOURCES

The States in the MANE-VU+VA region have elected to use the new MOVES mobile emissions model to estimate on-road mobile emissions. States will assemble either MOBILE6.2 or MOVES input information and submit it to MACTEC. The MACTEC team will assist in the development of MOVES inputs for mobile emissions modeling. Conversion of the MOBILE6.2 input files to MOVES2010 format will be performed by NESCAUM. NESCAUM will also perform MOVES2010 modeling using the MACTEC assembled input files.

4.1 MACTEC Review of State 2007 Input Files

The MACTEC team will develop quality assured files necessary as input to the MOVES2010 mobile source emissions model for calendar year 2007. The quality assured files will be of one of two types: county-specific spreadsheet files representing native MOVES2010 format (MySQL-ready table formats) or MOBILE6.2 input files that can be processed using spreadsheet translators provided by USEPA's Office of Transportation and Air Quality (OTAQ). The file type provided will vary from State-to-State and depending on the resources available to and approaches used in the past by each State. It is anticipated that MOBILE6.2 input files will be provided by the District of Columbia, Maine, New Hampshire and Rhode Island. It is anticipated that MOVES2010 input files will be provided by Connecticut, Delaware, Maryland, Massachusetts, New Jersey, and Vermont. NESCAUM will perform MOVES 2010 modeling using these input files. It is anticipated that New York, Pennsylvania, and Virginia will perform independent MOVES2010 modeling and will not require support from NESCAUM or the MACTEC team.

The MACTEC team will perform the following specific activities:

- For ALL States within the region (with the exception of States performing their own MOVES2010 modeling), the MACTEC team will provide the current default data for all fuel formulations and inspection and maintenance (I/M) programs in each State. Because fuel formulation and I/M information contained in MOBILE6.2 input files is difficult to extract, it is more straightforward to have all States review the current MOVES2010 default data and make changes to that information than to attempt to extract that information from MOBILE input files. As part of this OA process the MACTEC team will also provide data included in the following tables within the MOVES2010 MySOL database for the States to review: fuelSupply, fuelFormulation, IMCoverage, MonthVMTFraction, DayVMTFraction, HourVMTFraction, meteorology, rampFraction, and AveSpeedDistribution. States can develop those tables from scratch, but by providing the default data within MOVES2010, the States are given the option to focus on the ones which need more local information. The VMT (annual hpmsVTypeVMT and VMT roadTypeDistribution) and fleet characterization (sourceTypePopulation and sourceTypeAgeDistribution) tables have the highest priority.
- The MACTEC team will provide meteorological data for all counties in all MANE-VU+VA REGION states in MOVES format. This data will be consistent with the data the MACTEC team used to run the NMIM model to create the NONROAD emissions inventory for 2007 for these states under a separate work order from MARAMA.
- The MACTEC team will collect and compile input data for on-road mobile sources from MARAMA for the States listed above as providing data for MOBILE6.2 or for MOVES2010. The MACTEC team will NOT collect or QA input data files for states that will be performing their own MOVES2010 runs unless specifically requested by MARAMA.
- Once all of the data files are collected, the MACTEC team will perform QA reviews of each file. The QA steps will ensure that each file is a) correctly formatted, b) contains all required information, c) contains information that is conforms to standard codes or data entry types for each data element d) represents 2007 data and e) contains information that meets the agreed upon level of detail. Feedback and results from each QA review will be provided to each MARAMA State for data requiring change or clarification. Based on that feedback, final QA'd files will be developed.
- QA'd files will be provided to MARAMA and NESCAUM for use in performing MOVES2010 modeling. The MACTEC team will NOT run MOVES2010. The MACTEC team will also not convert MOBILE6.2 input files to MOVES2010 format. Only QA activities will be performed by the MACTEC team on MOBILE6.2 files, and changes approved by the State submitting the files will be made to ensure that the files can be processed using the current translators available for converting MOBILE6.2 files to MOVES2010 ready format. Actual conversion of the MOBILE6.2 input files to MOVES2010 format will be the responsibility of NESCAUM.

- The MACTEC team will prepare and submit draft documentation that details
 the submittals, the changes made and the information provided to NESCAUM
 for each State. The document will be submitted for State and MARAMA
 review and comment.
- The MACTEC team will make revisions to data files and draft documentation to address concerns raised by the States, NESCAUM or MARAMA.

The MACTEC team will monitor the project schedule and budget, and provided timely notification to MARAMA of significant slippage in the schedule. The MACTEC team will prepare monthly progress reports for submission to MARAMA.

4.2 NESCAUM Conversion of 2007 Input Files

NESCAUM will receive the quality assured files from MACTEC or directly from the States. These files will be converted to MOVES input files by NESCAUM using a variety of converters supplied by OTAQ.

4.3 NESCAUM 2007 MOVES Mobile Emission Modeling

NESCAUM will run the MOVES model for all states in the MANE-VU+VA region with the exception of New York, Pennsylvania, and Virginia, which will run the MOVES model themselves.

4.4 Onroad Schedule for 2007 Inventory

The schedule for deliverable work products and significant milestones for the 2007 onroad emission inventory is shown below:

Actions for Onroad Emission Sources	Completion Date
The MACTEC team will provide MOVES default I/M and fuel supply characteristics to States for review and modification.	1/20/09
Through MARAMA, States providing MOBILE6.2 data will provide revised I/M and fuel supply characteristics data for review to insure that any changes made are consistent with input specifications and format.	2/26/10
The MACTEC team will provide meteorological data in MOVES input format by county for all MANE-VU+VA states (including states running MOVES themselves) to MARAMA for review by States	4/29/10
The MACTEC team performs all QA checks on the submitted MOBILE6.2 files and provides feedback to MARAMA for each State based on the review, along with questions, suggested changes and a list of any missing information for review and revision/ clarification	2/23/10

Actions for Onroad Emission Sources	Completion Date
For any missing information, the MACTEC team will indicate whether or not the missing data has default data available within MOVES that could be used to provide the missing input information	7/31/10
The MACTEC teams performs all QA checks on the submitted MOVES2010 files and provides feedback to MARAMA for each State based on the review, along with questions, suggested changes and a list of any missing information for review and revision/ clarification	4/28/10
States revise MOBILE6.2 and MOVES data files and MARAMA delivers the revised data files and documentation to NESCAUM.	8/13/10
MACTEC prepares final draft documentation of the review of MOBILE6.2 and MOVES2010 input files.	8/13/10
MARAMA hosts monthly conference calls with states, EPA, and NESCAUM to identify and resolve issues.	2010-2011
NESCAUM completes MOVES 2010 modeling for 2007.	Feb. 2011
NESCAUM prepares documentation of 2007 on-road emissions inventory.	2011

5. NONROAD MOBILE SOURCES

5.1 NMIM 2007 Inventory Development

The preferred approach for those non-road sources included in USEPA's NONROAD or NMIM models is for the MACTEC team to provide the States with the inputs to USEPA NMIM 2007 input run, have the States review and update the NMIM input files as they deem necessary, and have the MACTEC team execute NMIM using revised input files that incorporate the States' revisions.

The MACTEC team will provide guidance to ensure consistency between the USEPA NMIM inputs and State-specific runs with respect to the use of monthly and/or seasonal meteorology for 2007. The MACTEC team will obtain the USEPA NMIM 2007 input/output files and provide them to the States for review and update. The MACTEC team will also revise the NMIM population table used to allocate emissions for certain types of equipment (i.e., lawn and garden). Some States with densely populated urban areas have expressed concern that NMIM allocates emissions for these sources based on population, which leads to overestimation of emissions in places like New York City.

5.2 NMIM Future Year Inventory Development

For the future years, NMIM itself includes algorithms to estimate the impacts of both changes in activity (i.e., growth) and changes in vehicle and equipment certification emissions over time. To the extent that States determine that alternative growth factors are appropriate, the MACTEC team will substitute the appropriate state and local data into the emissions estimation process. There may be potential control program changes that are not inherently reflected in the NMIM model. Such programs might include state and local fuel controls, limitations on idling, activity limits, etc. To the extent that such programs are envisioned in the projection inventory, the MACTEC team will modify the underlying modeling data spreadsheet (as described for the 2007 inventory) or make adjustments to NMIM results to include the appropriate control program data.

5.3 Nonroad NMIM Schedule

The schedule for deliverable work products and significant milestones for the 2007 onroad emission inventory is shown below:

Actions for Nonroad Emission Sources included in the NONROAD Model	Completion Date
2007 NMIM/NONROAD Inventory	
The MACTEC team provides easily reviewable input and output files from USEPA's 2007 NMIM runs.	5/14/09
The MACTEC team runs NMIM for certain States, assembles Statespecific NONROAD/NMIM results, and performs QA checks.	10/21/09
The MACTEC team converts the draft NONROAD/NMIM NIF files for 2007 to monthly SMOKE ORL files.	4/5/10
The MACTEC team revises data files and documentation based on State comments.	8/13/10
The MACTEC team converts the final NONROAD/NMIM NIF files for 2007 to monthly SMOKE ORL files.	9/30/10
Future Year NMIM/NONROAD Inventory	
MARAMA determines for which future years projections will be developed. States provide MACTEC with Future Year Inputs.	7/21/10
MACTEC delivers first draft of 2013, 2017, and 2020 NMIM inventories.	8/2/10
MACTEC incorporates state comments and files posted for Stakeholder Review.	8/9/10

Actions for Nonroad Emission Sources included in the NONROAD Model	Completion Date
MACTEC finalizes inventories and documentation	Nov. 2011
The MACTEC team converts the final NONROAD/NMIM NIF files for the three future years to monthly SMOKE ORL files.	Jan. 2011

5.4 M/A/R 2007 and Future Year Inventory Development

This section discusses nonroad source not included in NMIM – marine vessels, aircraft, and railroad locomotives (referred to as M/A/R).

5.4.1 Marine Vessels – 2007 Emissions Estimation Method

For marine vessels, the preferred approach is to use the USEPA 2008 inventory. The alternative approach is to use State-supplied data for 2007 or 2008 if it is available for use within the MANE-VU timeline. The final and least preferred alternative is to use the 2005 NEI if no other data is available. MARAMA will obtain information from USEPA regarding off-shore shipping emissions.

5.4.2 Airports – 2007 Estimation Method

USEPA has provided a newly calculated 2008 inventory for airport landing and take-off (LTO) aircraft emissions as well as emissions from ground support equipment. This inventory has been distributed to states and reviewed by inventory specialists. Airport ground sources were also calculated in NMIM and these calculations were completed as part of the previous NMIM modeling effort. The preferred approach to estimate airport emissions is to use State-supplied data for 2008. An alternative is for states to accept the USEPA inventory for Take-off and Landing emissions and the NMIM ground based emissions. MARAMA will coordinate with states to identify the preferred approach for each state. MARAMA and the States decided to treat airports as area sources. Emissions will be included in the NIF/ORL files at the county level and allocated to specific airport locations using the SMOKE ARTOPNT allocation file.

5.4.3 Railways – 2007 Emissions Estimation Method

The 2008 inventory for railroad locomotives and rail yards developed by ERTAC was provided to all MANEVU+VA States for review to determine if the inventory should be included in the 2007 base year emission inventory. Most States made changes to the 2008 ERTAC inventory (either to add/modify included sources or to revise emission values to 2007 values).

5.4.4 M/A/R 2007 Inventory Schedule

Actions for M/A/R 2007 Inventory	Completion Date
States review USEPA inventories for marine vessels and airports, and the ERTAC inventory for railroad locomotives.	6/30/10
States provide draft M/A/R inventories to MACTEC or advise MACTEC to use USEPA/ERTAC inventories/	6/30/10
The MACTEC team assembles the first draft of the 2007 M/A/R inventory and provides to States for review.	7/8/10
States provide comments and additional submittals to MACTEC.	7/21/09
The MACTEC team incorporates comments, prepares draft documentation, and posts files for stakeholder review.	8/9/10
MARAMA provides final comments to MACTEC TEAM after stakeholder review.	Sept-Dec. 2010
The MACTEC team incorporates comments and finalizes the 2007 inventory files and documentation.	Jan. 2011
The MACTEC team converts the 2007 M/A/R inventory to SMOKE ORL format.	Feb. 2011

5.5 M/A/R Future Year Inventory Development

Since M/A/R sources are not included in the NMIM model, emission projections for these sources will be developed separately. Previous projection emission inventories developed for MANE-VU relied on projection data used to support the USEPA's CAIR rulemaking. For consistency, the MACTEC team intends to also use the most current USEPA generated data as a starting point for the development of appropriate growth factors for M/A/R. Should affected States be envisioning control programs that have not been previously evaluated with regard to their effectiveness, the MACTEC team is prepared to undertake the evaluation necessary to estimate the associated emissions impacts. Likewise, the MACTEC team is prepared to implement process developed by ERTAC to improve the projection of emissions from aircraft, commercial marine vessels, and locomotives.

5.5.1 Marine Vessels – Future Year Inventory Method

The MACTEC team used recent growth data for domestic shipping is available in the AEO2010 (http://www.eia.doe.gov/oiaf/aeo/pdf/0383(2010).pdf). The annual growth rate for energy use for passenger rail is 1.2%; the annual growth rate for domestic shipping is 0.5%. The MACTEC team used the passenger rail annual growth rate of 0.5% for CMV

port emissions (SCC 22-80-002-100) and CMV underway emissions (SCC 22-80-002-200).

EPA developed regional emission inventories for Category 1&2 vessel and Category 3 vessels for calendar years 2002 through 2040. The methodologies used to develop the emission projections (for both a baseline and controlled scenario) are documented in *Regulatory Impact Analysis: Control or Emissions of Air Pollution from Locomotive Engines and Marine Compression Engines Less than 30 Liters Per Cylinder, EPA420-R-08-001a* (http://www.epa.gov/otaq/regs/nonroad/420r08001a.pdf), *Regulatory Impact Analysis: Control of Emissions of Air Pollution from Category 3 Marine Diesel Engines, EPA420-R-09-019* (http://www.epa.gov/otaq/regs/nonroad/marine/ci/420r09019.pdf) and *Proposal to Designate an Emissions Control Area for Nitrogen Oxides, Sulfur Oxides, and Particulate Matter, EPA-420-R-09-007* (http://www.epa.gov/otaq/regs/nonroad/marine/ci/420r09007-chap2.pdf). The MACTEC team used the EPA data from these RIAs to develop control factors for Category 1&2

5.5.2 Airports – Future Year Estimation Method

vessels (diesel) and Category 3 vessels (residual).

Aircraft operations were projected to future years by applying activity growth using data on itinerant (ITN) operations at airports. The ITN operations are defined as aircraft take-offs whereby the aircraft leaves the airport vicinity and lands at another airport, or aircraft landings whereby the aircraft has arrived from outside the airport vicinity. The MACTEC team used projected ITN information available from the Federal Aviation Administration's (FAA) Terminal Area Forecast (TAF) System for 2009-2030:

http://www.apo.data.faa.gov/main/taf.asp. This information is available for approximately 3300 individual airports. Actual LTOs are reported for 2007 and projected LTOs are provided for all years up to 2030.

5.5.3 Railways – Future Year Estimation Method

Recent growth data is available in the AEO2010 which was published in May 2010 (http://www.eia.doe.gov/oiaf/aeo/pdf/0383(2010).pdf). There are separate growth factors for passenger rail and freight rail energy use. The annual growth rate for energy use for passenger rail is 1.2%; the annual growth rate for energy use for freight rail is 0.7%. The MACTEC team used the passenger rail annual growth rate of 1.2% for inter-city passenger train locomotives (SCC 22-85-002-008) and independent commuter rail systems (SCC 22-85-002-009). The MACTEC team used the freight rail annual growth rate of 0.7% for Class I line haul (SCC 22-85-002-006), Class II/III line haul (SCC 22-85-002-007), and yard switch (SCC 22-85-002-010) locomotives.

In March 2008, EPA finalized a three part program that will dramatically reduce emissions from diesel locomotives of all types -- line-haul, switch, and passenger rail. EPA developed a national emission inventory for calendar years 2002 through 2040. The methodologies used to develop the emission projections (for both a baseline and controlled scenario) are documented in *Regulatory Impact Analysis: Control or Emissions of Air Pollution from Locomotive Engines and Marine Compression Engines Less than 30 Liters Per Cylinder, EPA420-R-08-001a* http://www.epa.gov/otaq/regs/nonroad/420r08001a.pdf. The MACTEC team used the EPA data from the RIA to develop control factors for railroad locomotives.

5.5.4 M/A/R Future Year Inventory Schedule

Actions for M/A/R 2007 Inventory	Completion Date
The MACTEC team provides recommendations for growth and control factors for M/A/R sources	7/13/10
The MACTEC team assembles the first draft of the 2007 M/A/R inventory and provides to States for review.	7/27/10
States provide comments and additional submittals to MACTEC.	8/9/09
The MACTEC team incorporates comments, prepares draft documentation, and posts future year projection factors and emission inventory files for stakeholder review.	8/9/10
MARAMA provides final comments after stakeholder review.	Sept-Dec 2010
The MACTEC team incorporates comments and finalizes the future year inventory files and documentation.	Jan 2011
The MACTEC team converts the future year M/A/R inventory to SMOKE ORL format.	Feb 2011

6. AREA SOURCES

6.1 2007 Area Source Inventory Development

There are three approaches that may be used to develop the 2007 area source inventory. The preferred approach is for states to prepare their own state-specific area source inventories for 2007. The second approach is to use State-specific inventories for 2005 or 2008 and grow/backcast to 2007. The third approach is to utilize USEPA's 2008 area source inventory for certain source categories and backcast to 2007. A mixture of the three approaches may be considered for certain States or source categories.

The MACTEC team will prepare a 2007 area source emission inventory for 2007. The "preferred" approach is likely to vary from State-to-State and category-to-category depending on the resources available to each State to provide 2007 emissions within the overall schedule constraints of this project. The MACTEC team will perform the following activities:

- For the agricultural ammonia source category, USEPA has updated the CMU model to include the 2007 Census of Agriculture and run the model for the region. USEPA has provided the results of this effort to States for review and approval. Each State will either accept the USEPA inventory as-is or provide an alternative inventory. The MACTEC team will obtain the USEPA ammonia inventory and alternative State inventories. For non-agricultural ammonia sources (such as domestic and wild animals, composting, and human perspiration), the MACTEC team will obtain the MARAMA 2002 Version 3 inventory and project to 2007 based on population or other suitable parameter. The MACTEC team will assemble the data into a common NIF format, perform a series of QA checks (data format, database referential integrity, completeness, and inclusion of all required pollutants), and return the ammonia inventory with QA concerns to the States and MARAMA for resolution and final QA.
- For the residential wood source category, USEPA has developed an ACCESS tool to calculate emissions. The MACTEC team will obtain and execute the USEPA residential wood tool using 2007 population/household data and provide the results and assumptions of this run to State for their evaluation. Each State will either accept the inventory developed using the USEPA residential wood tool or provide an alternative inventory. The MACTEC team will obtain alternative State inventories, assemble the data into a common NIF format, perform a series of QA checks (data format, database referential integrity, completeness, and inclusion of all required pollutants), and return the residential wood inventory with QA concerns to the States and MARAMA for resolution and final QA.
- For the wildfires source category, USEPA has developed a 2007 wildfire inventory in ORL format. The MACTEC team will obtain the USEPA 2007 wildfire inventory and provide the results and assumptions to States for their evaluation. Each State will either accept the USEPA inventory as-is or provide an alternative inventory. The MACTEC team will obtain alternative State inventories, assemble the data into a common NIF format and sum the annual emissions by county, perform a series of QA checks (data format, database referential integrity, completeness, and inclusion of all required pollutants), and return the wildfire inventory with QA concerns to the States and MARAMA for resolution and final QA.
- For other area source categories, USEPA has developed and provided draft 2008 activity and emissions for certain area source categories using ERTAC factors and national/state level activity data. Each State will (1) provide a complete 2007 inventory, (2) accept the USEPA 2008 inventory; or (3) provide

other 2002, 2005 or 2008 area source emissions. The MACTEC team will obtain the USEPA area source inventory and alternative State inventories (in NIF, EIS, or spreadsheet), use standard data (i.e., population, housing, employment, as applicable by source category or other factors provided by the state) to forecast/backcast to 2007 as needed, assemble the data into a common NIF format, perform a series of QA checks (data format, database referential integrity, completeness, and inclusion of all required pollutants), and return the area source inventory with QA concerns to the States and MARAMA for resolution and final QA.

- The MACTEC team will prepare and submit draft documentation and emission summary tables by county/SCC for State and MARAMA review and comment.
- The MACTEC team will revise data files and draft documentation to address concerns raised by the States or MARAMA.

If a State does not develop a 2007 area source inventory but has data for another recent year, the alternate year inventory submitted by the State must be backcast or projected to 2007. States must provide activity data usable to project or backcast the inventory and have the MACTEC team create the 2007 inventory from this data. At a minimum the data should include: county population, county employment data and county DOE EIA fuel use data (data is not provided by county by the DOE and each State must allocate to the county level for each category as appropriate for the State). If States do not provide activity data usable to project or backcast the inventory, then the MACTEC team will create the 2007 inventory using State-level population, DOE/EIA or other relevant surrogate data. For some categories (Open Burning, Permitted Burning, Prescribed Burning, Wildfires, Incineration, Structural Fires, Cigarette Smoking), backcasts or forecasts will assume no growth unless the States provide better information

6.2 2007 Area Source Inventory Schedule

Actions for 2007 Area Source Inventory	Date
The MACTEC team obtains and reviews the USEPA ammonia and wildfire inventories and documentation, and provides to States for final review	12/18/09
The MACTEC team obtains and executes the USEPA residential wood tool for 2007 and provides results and assumptions to States for review	1/8/10
The MACTEC team obtains the USEPA 2008 inventory and provides to States for review.	1/25/10
States provide the MACTEC team with initial instructions for developing the 2007 inventory for all area source categories.	3/31/10

Actions for 2007 Area Source Inventory	Date
The MACTEC team completes initial QA checks, performs forecasting/backcasting where necessary, provides the draft area source inventory with any QA concerns to the States and MARAMA for resolution and final QA, and provides draft documentation on data sources and methodologies.	5/19/10
States respond to QA issues and provide comments on draft inventory and documentation	7/31/10
The MACTEC team makes final revisions and deliver final inventory data files in NIF format and documentation for inclusion in the 2007 Technical Support Document.	8/15/10

6.3 Future Year Area Source Inventory Development

For SIP planning future year emissions estimation must be made in two distinct steps: (1) Growth and (2) Control. Two inventories will be prepared for each future year: (1) An inventory with only growth factors applied and (2) An inventory with both growth and control factors applied.

6.3.1 Inventory Growth

In the first step the MACTEC team will compile recommended area source growth factors in an easy-to-review spreadsheet and prepare a Technical Memorandum describing the data. The area source growth factors were developed using four sets of data:

- The US Department of Energy's Annual Energy Outlook 2010 (AEO2010) fuel consumption forecasts;
- County-level population projections;
- State-level employment projections by NAICS code; and
- Other State-specific emission projection data.

The priority for applying these growth factors was to first use the state-supplied projection data (if available). If no state-supplied data are available, then we used the AEO2010 projection factors for fuel consumption sources and the population/employment data for other source categories. States will have an opportunity to review the proposed area source growth factors and revise them based on state-specific growth information. To facilitate State review, the projection results will be summarized at various levels of detail, for example by facility, by SCC, and by State.

6.3.2 Grown and Controlled Inventory

In the second step the MACTEC team will assemble control factors included in USEPA approved SIPs, gasoline stage II emission ratios (as generated by NMIM-estimated VOC refueling estimates), residential wood combustion factors based on lower-emitting stoves and a reduction in higher emitting stove usage, portable fuel container factors reflecting the impact of the MSAT rule and state provided factors.

States will have an opportunity to review the proposed area source control factors and revise them based on state-specific information. To facilitate State review, the projection results will be summarized at various levels of detail, for example by facility, by SCC, and by State.

6.4 Future Year Area Source Inventory Schedule

Actions for Future Year Area Source Inventories	Date
The MACTEC team compiles growth information in a spreadsheet and provides the spreadsheet to MARAMA for review by States	4/28/10
The MACTEC team compiles control information in a spreadsheet and provides the spreadsheet to MARAMA	5/3/10
The MACTEC team provides a draft technical memorandum to MARAMA	6/29/10
The MACTEC team revises growth and control factors based on state comments	9/17/10
The MACTEC team applies the growth and control factors to estimate emissions, provides results to MARAMA and States to review, and provides draft documentation of methods and data sources	9/20/10
The MACTEC team responds to state comments and provides a final draft of emissions inventory and documentation with results of QA checks and identification of any remaining concerns.	10/1/10
MARAMA posts the inventory on a website and send notice of the EGU projections to USEPA and stakeholders for comments.	November 2010
Stakeholders provide comments to MARAMA and States.	November 2010
States provide the MACTEC team with final revisions based on additional State review and stakeholder comments.	December 2010
The MACTEC team makes final revisions to NIF inventory and documentation and submits data files to MARAMA.	February 2011

7. EMISSIONS DATA PROCESSING

7.1 Annual Inventories in NIF Format

As part of the deliverables for the point, area, and nonroad source categories, the MACTEC team and/or other contractors will provide final 2007 and future year files in the NIF 3.0 format, with additional data elements tagged to the end of tables to track the origin of data, revision dates, and other fields to facilitate QA and generation of emission summaries. The NIF 3.0 files will be provided as both Access databases and text files. The MACTEC team will provide the population, employment, fuel use and other factors used to forecast/backcast emissions for 2007 in an Access database. The MACTEC team will provide the growth and control factors used for future year inventories. The growth and control factors will be provided in RPO data exchange format (or other similar format specified by MARAMA).

7.2 NIF-to-ORL Data Conversion for MANE-VU+VA Region

In addition to the basic NIF annual data files, there are a number of activities under this emission data processing task that are needed to process files for input to the SMOKE emission modeling system. These activities are necessary to properly format MANE-VU+VA data for input to SMOKE, to format data for other regions for use in regional air quality modeling, and to prepare and QA various SMOKE auxiliary files.

7.2.1 Point Sources

The MACTEC team or other contractors will prepare a SMOKE PTINV one-record-perline (ORL) file for all point sources for 2007 and three future years.

7.2.2 Nonroad Marine Vessel, Aircraft and Rail Sources

The MACTEC team will prepare a SMOKE ARINV ORL file containing annual emissions by county from marine vessels, aircraft, and rail sources for 2007 and three future years. For aircraft sources, the MACTEC team will use the ARINV ORL format (county level emissions) and the SMOKE modelers will use the SMOKE ARTOPNT file to allocated county-level emissions to specific airport locations. For marine vessel emissions, the MACTEC team will consult with MARAMA regarding how to incorporate data from USEPA on off-shore marine vessel emissions. For rail sources, if data is available for rail yards as point sources, the MACTEC team will prepare PTINV ORL files for those sources; otherwise, ARINV ORL files will be generated.

7.2.3 Nonroad / NMIM Sources

The MACTEC team will convert the NIF files for NMIM sources to the SMOKE ORL Nonroad Format for ARINV for 2007 and three future years. Since the NIF files for NONROAD/NMIM sources contain monthly emissions, the MACTEC team will create separate ORL files for each month. In these monthly files, the "typical day" field shall contain emissions calculated from dividing the monthly total by the number of days in the month, and the "annual total" field shall contain emissions calculated by multiplying the "typical day" emissions by 365.

7.2.4 Other Area Sources

The MACTEC team or other contractors will convert the NIF files for all other area sources with emissions reported at the county level to the SMOKE ORL nonpoint format for ARINV for 2007 and three future years.

7.2.5 Quality Assurance

The MACTEC team will quality assure the SMOKE inventory files to ensure that the reformatting of these data does not invalidate the integrity of the original inventories. As such, QA on these files will include the comparison of reformatted data to the original files ensuring that specific required fields have been appropriately converted to the field type, length, and unit requirements of the ORL structures. Should excessive differences in these fields be identified in this process (i.e., the multiple rounding to zero of very small emissions), the MACTEC team will immediately contact MARAMA to discuss resolution of the issue and make modifications to the procedures. A brief emissions summary will be compiled from the converted files and will reflect the results of the QA activities.

The MACTEC team will prepare documentation describing the methods, data and results of the SMOKE inventory file development process, which will be submitted to States for review and approval for inclusion in the final Technical Support Document.

7.2.6 Schedule for SMOKE ORL File Preparation for MANE-VU+VA Region

Actions for SMOKE ORL File Preparation	Date
2007 SMOKE ORL Files	
The MACTEC team prepares draft SMOKE ORL PTINV files for nonEGU and EGU point sources.	3/15/10
After review by SMOKE emission modelers, the MACTEC team prepares final SMOKE ORL PTINV files for nonEGU and EGU point sources.	4/15/10

Actions for SMOKE ORL File Preparation	Date
The MACTEC team prepares draft SMOKE ORL ARINV monthly files for NMIM/NONROAD sources.	3/15/10
After review by SMOKE emission modelers, the MACTEC team prepares final SMOKE ORL ARINV monthly files for NMIM/NONROAD sources.	9/30/10
The MACTEC team prepares draft SMOKE ORL ARINV files for M/A/R sources.	12/15/2010
After review by SMOKE emission modelers, the MACTEC team prepares final SMOKE ORL ARINV monthly files for M/A/R sources.	12/31/2010
The MACTEC team prepares draft SMOKE ORL ARINV files for area sources.	8/31/10
After review by SMOKE emission modelers, the MACTEC team prepares final SMOKE ORL ARINV monthly files for area sources.	9/30/10
Future Year SMOKE ORL Files	
The contractor prepares draft SMOKE ORL PTINV files for nonEGU point sources for three future years.	Nov. 2010
After review by SMOKE emission modelers, the contractor prepares final SMOKE ORL PTINV files for nonEGU point sources.	Dec. 2010
The contractor prepares draft SMOKE ORL PTINV files for EGU point sources for three future years.	2011
After review by SMOKE emission modelers, the contractor prepares final SMOKE ORL PTINV files for EGU point sources for three future years.	2011
The MACTEC team prepares draft SMOKE ORL ARINV monthly files for NMIM/NONROAD sources for three future years.	Dec. 2010
After review by SMOKE emission modelers, the MACTEC team prepared final SMOKE ORL ARINV monthly files for NMIM/NONROAD sources for three future years.	Jan. 2011
The MACTEC team prepares draft SMOKE ORL ARINV files for M/A/R sources for three future years.	Dec. 2010
After review by SMOKE emission modelers, the MACTEC team prepared final SMOKE ORL ARINV for M/A/R sources or three future years.	Feb. 2011
The MACTEC team prepares draft SMOKE ORL ARINV files for area sources for three future years.	Feb. 2010
After review by SMOKE emission modelers, the MACTEC team prepared final SMOKE ORL ARINV for area sources.	Feb. 2010

7.3 Quality Assurance of SMOKE Spatial and Temporal Files

MARAMA's emission modelers will use the SMOKE emission modeling systems to allocate annual emissions to hourly, gridded, speciated emissions for input to the regional air quality model. The purpose of the work described in this section is to quality assure and prepare limited updates to the SMOKE speciation, spatial and temporal profiles.

The MACTEC team will obtain the latest versions of the SMOKE speciation, spatial and temporal profiles from USEPA's CHIEF website located at: http://www.epa.gov/ttn/chief/emch/index.html .

In particular, the relevant locations of the ancillary data files are

ftp://ftp.epa.gov/EmisInventory/2005v4/ancillary_smoke/,

ftp://ftp.epa.gov/EmisInventory/emch_latest_ancillary/smoke_format/, and

<u>ftp://ftp.epa.gov/EmisInventory/2002v3CAP/ancillary_smoke/</u> (for U.S and Mexican gridding surrogates which were not updates in the 2005-based platform)

For the spatial, temporal, and speciation profile, the MACTEC team will perform QA checks to ensure that SCCs in the annual emission inventory files are cross-referenced to source classification codes (SCCs) in the CHIEF SMOKE profile. In cases where a proper cross-reference does not exist, the MACTEC team will update the SMOKE files using data for similar SCCs or as otherwise determined on a case-by-case basis.

In some cases, States may provide their own data to update the CHIEF SMOKE allocation profiles and cross-reference files. The MACTEC team will use the data approved by MARAMA to replace the CHIEF SMOKE defaults.

The MACTEC team will investigate the availability of improved temporal factors for allocating agricultural ammonia (fertilizer) and residential wood combustion emissions. The MACTEC team will investigate the availability of improved spatial and temporal allocation factors for lightering emissions. The MACTEC team will investigate the allocation factors for airports and provide information on the spatial allocation and landing and takeoff data used to allocate airport area source emissions. The MACTEC team will investigate whether improved allocation factors are available. If available, the MACTEC team will summarize the improved factors and provide them to MARAMA and the States for review and approval. Upon approval by MARAMA, the MACTEC team will use the improved temporal profiles to replace the CHIEF SMOKE defaults.

The MACTEC team will review and document the spatial and temporal allocation files used for Marine, Air, and Rail non-road emissions.

The MACTEC team will review and document the temporal allocation files used for the ten largest source categories for NOx, VOC, ammonia, and PM emissions

The MACTEC team will document changes made to the CHIEF SMOKE profiles and submit to MARAMA for review and approval. The MACTEC team will prepare documentation describing the methods, data and results of the SMOKE auxiliary file quality assurance and update process, which will be submitted to States for review and approval for inclusion in the final Technical Support Document.

Actions for SMOKE Auxiliary File QA	Date
The MACTEC team confirms that all point source SCCs in NIF files have a match in SMOKE auxiliary files.	4/16/10
The MACTEC team prepares SMOKE temporal profiles for 6-month CAMD reporting units and documentation.	4/16/10
The MACTEC team confirms that all NMIM SCCs in NIF files have a match in SMOKE auxiliary files.	4/5/10
The MACTEC team confirms that all Area Source SCCs in NIF files have a match in SMOKE auxiliary files.	9/15/10
The MACTEC team confirms that all MAR SCCs in NIF files have a match in SMOKE auxiliary files.	9/30/10
The MACTEC team investigates the availability of improved temporal factors for allocating agricultural ammonia (fertilizer) and residential wood combustion emissions.	9/30/10
The MACTEC team investigates the availability of improved temporal and spatial allocation factors for lightering emissions.	9/30/10
The MACTEC team investigates the allocation factors for airports and provides information on the spatial allocation and landing and takeoff data used to allocate airport area source emissions.	9/30/10
The MACTEC team reviews and documents the spatial and temporal allocation files used for Marine, Air, and Rail non-road emissions.	9/30/10
The MACTEC team or another contractor provides updated SMOKE speciation, spatial and temporal profiles to MARAMA and the States for review and approval.	10/31/10
The MACTEC team or another contractor provides final SMOKE speciation, spatial and temporal profiles and documentation.	2/28/11

7.4 ORL Files for Other Regions

The purpose of this work element is to obtain data for regions outside of the MANE-VU+VA from other agencies so that the MARAMA modeling reflects the latest up-to date emissions inventory for these areas. LADCO and SESARM are currently developing 2007 emissions inventories and associated growth and control factors for estimating future year emissions. Data from these non-MARAMA agencies may not be available in a form suitable for input into SMOKE, the emissions pre-processor used by MARAMA modelers, because (1) LADCO uses a different pre-processor for their emissions modeling and (2) files may not yet be converted into SMOKE format by SESARM. In addition, LADCO and SESARM may not be modeling the same future years as MARAMA. MARAMA or its contractors will obtain emission files from LADCO and SESARM and analyze to format for compatibility with the MARAMA SMOKE modeling platform. If sub-annual emissions are available in the files for certain categories, MARAMA or its contractors will develop and implement procedures to generate annual SMOKE ORL inventory files for such categories. As discussed in the previous section, MARAMA or its contractors will conduct QA of the ORL files to ensure that the reformatting of these data does not invalidate the integrity of the original inventories. MARAMA or its contractors will prepare documentation describing the methods and results of these data conversion processes, which will be submitted to States for review and approval and included in the final Technical Support Documentation. One primary task and four optional tasks are proposed under this section.

7.4.1 Conversion of LADCO 2007 Emissions

If necessary, MARAMA or its contractors will convert the 2007/2008 emission files made available by LADCO for its most recent modeling efforts. Because these files are generally provided in a format developed for processing the emissions with the CONCEPT emissions model, MARAMA or its contractors will obtain and convert these files into the ORL format required for processing of these data in SMOKE. Methods comparable to the reformat of data as described above will be used.

7.4.2 OPTIONAL Preparation of LADCO or SESARM Future Year Emissions

Because of the timing of OTC modeling, it may be necessary to estimate emissions from other regions before final inventories are available. MARAMA may select a contractor to prepare emission forecasts of stationary area, agricultural ammonia, point sources, on-road, nonroad mobile and marine, aircraft, and railroad (MAR) emission sources using SESARM or LADCO 2007/2008 inventories and factors for three future years. At this time, the preparation and availability of growth and control factors remain unclear.

7.4.3 OPTIONAL Conversion of LADCO or SESARM Future Year Emission Inventories

MARAMA may select a contractor for an additional subtask to convert the future year emission inventories prepared for the LADCO or SESARM states into the ORL formats required for MARAMA modeling, if necessary and if funding is available.

7.4.4 OPTIONAL ORL Files for Canada

Regional air quality modeling also requires up-to date emission inventories for Canadian provinces in the modeling domain. In general, MARAMA plans to use the same Canadian emissions information that the US USEPA has used in its most recent modeling for the eastern US. MARAMA may select a contractor to provide assistance in forecasting emissions from Canadian sources for 2007 or selected future years, depending on the availability of information from USEPA and other regional organizations.

7.4.5 Schedule for ORL Files for Other Regions

The schedule for obtaining inventories for other regions is currently under development. Work on these tasks will likely occur in early to mid-2011.

8. TECHNICAL SUPPORT DOCUMENTATION

8.1 2007 Emissions Inventory Technical Support Documentation

The MACTEC team will provide the following written reports concerning the 2007 emissions inventory:

- Work Plan (combined 2007 and future years);
- Quality Assurance Project Plan (combined 2007 and future years);
- Draft sections for each inventory sector as they are available identifying the general methods used, state-specific methods, data sources, QA steps, state-specific responses to QA issues, and emission summaries; and
- A final Comprehensive 2007 Technical Support Document.

In general, for each written report, States and MARAMA will be provided a two-week review period to provide comments. Draft reports will be provided in Word format. Final reports will be provided in both Word and Adobe PDF format.

8.2 Future Year Technical Support Documentation

Because of the potential lag time for the completion of the future year inventories, the MACTEC Team will develop stand-alone documents for the future year inventories, including:

- Draft sections for each inventory sector as they are available identifying the general methods used, state-specific methods, data sources, QA steps, state-specific responses to QA issues, and emission summaries; and
- A final Comprehensive Future Year Technical Support Document (not including on-road mobile sources).

In general, for each written report, States and MARAMA will be provided a two-week review period to provide comments. Draft reports will be provided in Word format. Final reports will be provided in both Word and Adobe PDF format.

8.3 Emission Summary Reports

As part of the technical support documents described above, the contractor will provide a series of draft and final emission summaries to facilitate the review and documentation of the final inventories. Annual onroad emissions will be included once provided by SMOKE emissions modelers. These summaries will include, at a minimum, the following summaries:

- Regional and state-level summaries by inventory sector (EGU, nonEGU, onroad, nonroad, marine/air/locomotive, area), pollutant, and year (2007 and future years/scenarios);
- Regional and state-level summaries by USEPA Tier 1 category, pollutant, and year (2007 and future years/scenarios); and
- County-level summaries by SCC, pollutant, and year (2007 and future years/scenarios).

The emissions summaries will be consistent with USEPA emission inventory reporting requirements. The Regional and state-level emission summaries will be provided in Excel spreadsheets. The county-level summaries may need to be provided as Access databases instead of Excel spreadsheets since they may exceed Excel's size limitations.

8.3.1 Schedule for Technical Support Documentation

The MACTEC teams submitted a draft 2007 TSD in August 2010. The final 2007 TSD and associated 2007 emissions summaries were delivered by September 30, 2010. The future baseline TSD will be delivered by February 2011.

The schedule for the future year TSD and emission summaries is currently under development. Work on these tasks will likely occur in late 2010 and early to mid-2011.

9. ALTERNATIVE EMISSION CONTROL STRATEGIES

The preceding tasks addressed the development of a 2007 inventory and emission projections for three future years that included the impacts of post-2007 "on-the-books" and "on-the-way" emission reduction strategies. States are evaluating possible controls for potential further emission reductions to help demonstrate attainment of the ozone and PM2.5 NAAQS. Measures under consideration include, but are not limited to, the following:

- **Potential Mobile Source Controls**: off-shore lightering of ships, non-road vehicle and equipment idle reduction, seaports, regional fuel, diesel inspection and maintenance, and VMT reductions;
- **Potential Point Source Controls:** ICI boilers, EGUs, HEDD units, municipal waste combustors, distributed generators, and energy efficiency/renewable energy, and
- **Potential Area Source Controls:** architectural and industrial maintenance (AIM) coatings, consumer products, cleaning solvents, and gasoline service stations.

Final decisions will be made by the States to pursue specific measures for inclusion in a state implementation plan.

It is likely that regional air quality modeling will be undertaken to assess the air quality impacts of these potential measures. Control factors will need to be developed and applied to the future year emission inventories, and these inventories will be processed through the SMOKE and air quality modeling platforms. In some cases, the development of the control factors may be relatively simple. For example, an AIM coating rule enhancement could be accounted for by a simple percent reduction that applied to a given SCC and all counties in the modeling domain. In other cases, the development of control factors could be more time consuming. For example, an ICI boiler rule may require the development of control factors that vary by county, boiler size, and fuel type. Since it is not currently known which control measures will be included in SIP modeling, it is not possible to provide a detailed cost estimate for developing, applying and documenting the potential SIP measure control factors. MARAMA will select a contractor to provide emissions inventory files and documentation for a future controlled and Beyond on the Way Inventory.

10. SCHEDULE

The high-level schedule, based on the assumptions listed in the previous sections, is summarized below to show when data files will be available to the emissions and air quality modeling team. Please refer to previous sections for specific due dates for State submittals and reviews. Note also that not all 2007 and future year activities have to be performed sequentially; that is, some work on the future year inventories will be initiated prior to completing the 2007 inventory work.

Year	Month	EGU	Non- EGU	Onroad MOVES	Nonroad (NMIM)	Nonroad (MAR)	NH3/ Res Wood/ Wildfire	Other Area	
2009	May	Х	Х	Х		Х	Х	Х	
2009	Jun	Х	Х	Х		Х	Х	Х	
2009	Jul			Х		Х	Х	Х	
2009	Aug			Х		Х	Х	Х	
2009	Sep					Х	Х	Х	
2009	Oct								
2009	Nov								
2009	Dec								
2010	Jan								
2010	Feb								
2010	Mar				2007				
2010	Apr	2007	2007		2007				
2010	May								
2010	Jun								
2010	Jul								
2010	Aug						2007	2007	
2010	Sep								
2010	Oct								
2010	Nov								
2010	Dec					2007			
2011	Jan								
2011	Feb		2020	2007	2020	2020	2020	2020	
2011	Mar								
2011	Apr								
2011	May			2020					
2011	Jun								
2011	Jun	2025	2025	2025	2025	2025	2025	2025	
						er review, app			
2007	2007 – Convert NIF to ORL, perform other emission data processing activities, final docume files submitted to SMOKE emission modelers								
	Future Years – Assemble growth/control data, project emissions. State/stakeholder review, project emissions.								

	2007 – Assemble data, perform QA, State/stakeholder review, approve NIF files, draft documentation
2007	2007 – Convert NIF to ORL, perform other emission data processing activities, final documentation, files submitted to SMOKE emission modelers
	Future Years – Assemble growth/control data, project emissions, State/stakeholder review, prepare NIF files, draft documentation
2020	Future Years – Convert NIF to ORL, perform other emission data processing activities, final documentation, files submitted to SMOKE emission modelers
	SIP Control Measures – Assemble control scenarios, apply control factors, State/stakeholder review, prepare NIF files, draft documentation
	SIP Control Measures – Convert NIF to ORL, perform other emission data processing activities, final documentation, files submitted to SMOKE emission modelers
2025	Compile initial 2025 inventory for PM nonattainment counties (and other counties as data is available)

11. Work Order List

Work Order #	Tasks	Scheduled Completion
1	Prepare Work Plan	Sept, 2010
2	Annual 2007 Point Source Inventory	Apr. 2010
3	Nonroad Inventory Preparation	Jan. 2010
4	Future Year Point Sources	Feb. 2011
5	2007 Area Source Inventory	Aug. 2010
6	QA MOVES Inputs	Aug. 2010
7	Hourly 2007 Point Source Inventory	Nov. 2010
8	NIF to ORL Conversion	Feb. 2011
9	SMOKE Auxiliary File Review	Feb. 2011
10	2007 Technical Support Document Preparation	Sept. 2011
11	Future Year Area Source Inventory	Feb. 2011
12	Future Year Technical Support Document Preparation	Feb. 2011
13	Update 2007 Inventory and Documentation	Feb. 2011

APPENDIX A

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