

SCOPE OF WORK: STATIONARY SOURCES JOINT FORUM

The Western Regional Air Partnership (WRAP) continues to improve its emissions inventory data as a foundation to regional haze planning in the West. Initial planning activities focused on controlling SO₂ emissions from large industrial sources through stepped reduction milestones and subsequent emissions trading (if necessary). Another current study is identifying specific sources eligible for best available retrofit technology (BART), should states and tribes decide to design their control programs to meet their visibility goals through BART implementation instead of alternative strategies, such as emissions trading.

The objective of this contract is to support the WRAP's Stationary Sources Joint Forum (SSJF) in developing a sound technical basis for control strategy development pertaining to the remaining sources not previously addressed in the SO₂ annex and the BART analysis. A focus of the SSJF support contract will be on NO_x controls for the full range of NO_x sources (with emphasis on electric generating units [EGUs] and oil and gas production), SO₂ sources located in the eight states not covered in the annex, and other pollutants (VOC, PM, and ammonia) from BART-eligible sources. The work conducted under this contract includes all stationary (i.e., point and area) source categories, excluding wind erosion, and prescribed and wild fire.

Some of the key goals of this project are the following:

- C Improving the 2002 WRAP emissions inventory. This project will achieve emissions inventory improvements by collecting more comprehensive information on existing control technology types and efficiencies as currently included in the WRAP Emissions Data Management System (EDMS) for 2002 and the 2002 National Emissions Inventory (NEI) maintained by U.S. EPA.
- C Estimating a reliable 2018 baseline inventory. This will be accomplished using the improved 2002 inventory and estimating emission increases/decreases due to new sources coming on line, retiring sources, implementation of future air quality regulations by federal, state, local, and tribal entities, and demographic and economic growth variables.
- C Developing a set of three to five control strategy scenarios that help WRAP meet its reduction goals for 2018 and beyond. The basis of these will be a thorough review of existing controls, analysis of the emissions impacts of new controls on existing sources, and detailed documentation containing the basis for the scenarios and emission reductions calculations.

The technical scope of this SSJF support contract includes a variety of different types of emissions inventory and controls analyses, and encompasses two large tasks, with multiple subtasks. In addition to the detailed work described in the tasks below, the Contractor will support the SSJF during periodic reviews of the completed analyses throughout the contract duration.

Task 1: Emissions Inventory Analysis, Improvement, and Projections

Task 1.A – Inventory Review

The 2002 inventory is of crucial importance, because it will be the basis for the 2018 emissions projections, control technology analysis, and control strategy scenarios to be developed in support of the §308 State Implementation Plans for regional haze by the WRAP. Thus, the 2002 emissions estimates for sulfur dioxide (SO₂), nitrogen oxides (NO_x), volatile organic compounds (VOCs), particulate matter (PM, PM₁₀, and PM_{2.5}), elemental carbon, organic carbon, carbon monoxide (CO), methane, and ammonia, housed in the WRAP EDMS need to be closely reviewed. Electric utilities, industrial boilers and turbines, and oil and gas sources are especially important source categories for review.

The contractor will work closely with the Emissions Forum and the SSJF to formulate a QA Plan (QAP) that details the data to be reviewed, the methods to be used, and the review priorities. The QAP will include a summary of the QA/QC activities conducted previously by the EDMS contractor. Building upon their efforts, in-depth QA/QC will focus on facility, pollutant, and source category completeness, and the availability of control device information and control device efficiencies for point as well as area sources. The information stored in the final WRAP-wide BART-source database will be used as a QA tool in the 2002 emissions inventory review.

The Contractor will use other key data sources to conduct a review of WRAP's 2002 stationary source inventory including the draft 2002 NEI and the final 1999 NEI and its related data sources (e.g., original data sets—state, local, and tribal NEI submittals; U.S. EPA's Clean Air Markets Division (CAMD) Acid Rain program continuous emissions monitoring (CEM) data; and the U.S. Department of Energy's Form 767 data. Also, the 1999 NEI for point and area sources may be a useful data set to review for available control device information that was perhaps overlooked in the 2002 submittals. The 1996 baseline inventory used in the §309 Technical Support Document (TSD) should also be used in this evaluation.

A tracking system for conducting QA/QC activities, including standardized procedures, will be developed and implemented. Also, detailed documentation will be stored for each state, local, and tribal inventory reviewed that enables WRAP SSJF to independently recreate the QA/QC process and results. The contractor will provide a draft and final report that describes the QA/QC activities, sources of information, and any additional data improvement recommendations.

Point vs. Area Source Definitions

State, local, and tribal agencies may define point and area sources differently depending upon their priorities and resources. The point versus area source definition will impact the completeness assessment, as well as the control device and control efficiency assessment. Some states may inventory small facilities or emission units as individual point sources, while others may not and will only report them as county-level area sources. It can also be a problem when two different departments in the state, local, or tribal agency develop the point and area source inventories. Examples of categories that may be included in both the point and area source inventories include industrial boilers, turbines, internal combustion engines, and oil and natural gas production and transmission facilities.

The Contractor will assess the point and area source coverage for each state's inventory in the EDMS by comparing the inventories on a county-source category code (SCC)-pollutant basis. This assessment will be needed in the next task, where the available (and lacking) control device information in the point, as well as area source inventories, is reviewed and supplemented as necessary.

Gap Filling/Priorities for Inventory Completeness

Because it may not be feasible to review emissions and controls data for all point source facilities and area source categories within the WRAP EDMS, the Contractor will focus on the largest emitting source categories and on source categories believed to have the greatest impact on visibility impairment. For example, geographical information system (GIS) tools can be used to visually assess the influence of sources on Class I areas, help identify critical counties, and then "drill down" to categories that are driving the estimates. Even if a category is missing or underrepresented in one county, if it shows up as having a key influence on total emissions in many counties, we could target that county for review. The Contractor will use GIS to examine 2002 WRAP EDMS point source emissions as well as 1999 NEI and other emissions data, as necessary.

For area sources, QA/QC will first focus on the completeness of each inventory in terms of source category coverage. For example, certain area source categories should exist in most if not all counties. These include, among others, industrial, commercial, and institutional fuel combustion, turbines, internal combustion engines, and residential fuel combustion. The Contractor will develop a list of these very common area source categories, and prioritize them according to their impact on regional haze. The EDMS should then be reviewed for gaps among these "common" categories.

In addition to the checks outlined above, comparison checks can be made between the 1999 NEI and the EDMS database to uncover missing area source categories and/or area source categories that significantly differ between the two inventories. After running the comparison tests and checks, the Contractor will survey WRAP states and tribes with respect to the composition of their point and area source inventories.

Based on the responses provided, the Contractor will recommend to the SSFJ certain area source category gap-filling measures in order to have a complete 2002 base year area source inventory. Recommendations could include using the 1996 WRAP inventory or the 1999 NEI as a starting point for pulling in the emission estimates, with growth projection and regulatory adjustments made as needed. Responses to the last question will feed into the control device/control efficiency assessment.

Based upon an initial review of the 2002 WRAP EDMS inventory, the Contractor will develop a list of the most significant categories in terms of their contribution to the total NO_x and SO₂ emissions in the WRAP states. The EDMS point source QC will be targeted at finding missing facilities, pollutants, and counties, and identifying emission outliers. If a facility is missing, it may be because it closed, changed names, or its emissions were reported within an area source category. The Contractor may need to contact the states and/or tribes to determine the reason for their exclusion from the EDMS-housed inventory.

The Contractor will also evaluate significant differences between the 1999 NEI and the WRAP EDMS 2002 inventory (e.g., emissions by pollutant, regional/state/county level; emissions by pollutant/facility; number of counties reported by state between 1999 and 2002, etc.). Large

differences between the 1999 and 2002 inventories may indicate missing data or data reported as area sources. We will prepare a list of missing facilities and present them to the SSJF for confirmation of status (closure, name change, or area source).

Control Device Information and Control Efficiencies

For area sources, this task will use the §309 TSD as a starting point. Appendix A of the TSD presents an assessment of control plans for selected nonattainment areas. The Contractor will update and expand this summary information. The Contractor will compile tables of federal regulations and their control device/emission level requirements, area source cutoffs, reporting requirements, and implementation dates. Using knowledge of state and local regulations gained from the current WRAP BART identification project, the Contractor will work with the Emissions Forum and the SSJF to confirm state, local, and tribal area source regulations that are also in place as of the end of 2004. The next step will consist of applying area source control device identifiers and efficiencies for review by the SSJF. These will be developed using a combination of information and techniques including: state and local regulations, the Emission Inventory Improvement Program (EIIP) default control efficiencies by control device and pollutant; AP-42/FIRE; and engineering judgment.

For point sources, the Contractor will first check to see how many sources have indicated the emissions are controlled and have provided complete control information (control device codes and control efficiencies.) For these sources, the only QA step necessary is to ascertain that the control device is appropriate for the source category and the pollutant (i.e., the control device code is correct) and the efficiency is within the expected range. If an estimate is labeled “controlled” but no control device is provided, then this would be a candidate for augmentation. If an estimate is labeled uncontrolled, review would consist of an assessment of the emission factor to see if it is truly an uncontrolled factor, if it is provided. Otherwise, no further review would be required. There are likely to be a large number of records that are labeled as “controlled,” but lacking associated control devices. Again, the Contractor will need to narrow this set down to a manageable size. This prioritization can include proximity to Class I areas and the size of the source. The Contractor will focus on sources that emit greater than 100 tons per year (tpy) of any one regional haze pollutant. For EGU’s, these permits would address any CO limits that need to be considered if they ultimately impact achievable NO_x reductions.

Additional Augmentation

The Contractor will perform a quick comparison of the NEI to EDMS inventory to locate any elements that can be filled in or revised, especially for data elements that will be needed in the projections task below (e.g., Source Category Codes [SCCs], Standard Industrial Classification [SIC] codes, and design capacity information.)

Task 1.B – Oil and Gas

Oil and gas sources have been recognized as major contributors to the overall stationary source emissions inventory in the WRAP domain. This task will focus on understanding the quality of current estimates of emissions from these sources, identifying and implementing improvements in these estimates, and developing and implementing projection methodologies to develop future year inventories for these sources.

Inventory Review

As the first subtask, the contractor will work with the WRAP SSJF to identify all recent oil and gas emissions inventories and any available documentation. These include inventories developed and submitted by the states for the 2002 NEI, any tribal inventories, and inventories developed for states that did not provide their own emissions. The contractor will compile a list of the states that submitted oil and gas emission inventories for the NEI 2002 (for point sources data is available, nonpoint source data will be obtained from EPA), the contractor will obtain 2002 oil and gas data from the EDMS for comparison, and will work with ITEP to obtain a list of any tribes that have developed oil and gas emission inventories. The contractor will then survey those states that have not yet submitted data for NEI to see if any emission inventories are in development.

The contractor will then review all available state and tribal emission inventories, and will review the oil and gas emission inventories for other states prepared by EPA for the NEI. In particular, the contractor will document the specific sources/processes included, the underlying data sources and assumptions, and the emission factors used. As part of the contractor's overall survey work for the project, appropriate personnel at state air quality agencies and local air districts will be contacted to identify and/or confirm the presence of any current controls applied to these sources, and also to discuss emission factors to be used. The contractor will also note if and how these controls were accounted for in the inventories.

Updating Existing Inventories

Based upon the findings of the above review, the contractor will recommend a methodology that addresses the areas in the existing inventories that have been identified for improvement. Priorities will be discussed and assessed with the SSJF Oil and Gas work group. An initial approach for discussion is to use the methodology currently used by ENVIRON to estimate the Wyoming 2002 oil and gas emissions inventory. This approach is described below.

A proposed methodology to be evaluated with the SSJF Oil and Gas work group is to use available production and well data. Data are available for most WRAP states, and in most cases on-line, as shown the Table 2-4. For those states where production data are not available on-line the contractor will contact state agencies to obtain available data. Even for those states where data are available on-line, the contractor will likely need to work closely with agency personnel to obtain data in proper formats for analysis, and to address questions that arise as data is reviewed. These data are ideally suited for use in estimating emissions from oil and gas sources not only because of their availability, but also because of the type of information they contain. Data fields typically available include the well location (for spatial allocation purposes), type (oil, gas, or CBM), date of completion (useful in estimating fraction of the year emissions are expected to occur as well as whether a well is still in operation at a future date), name of the production field (emission factors are expected to vary among different fields as described below), and production volume, which forms the basis for activity levels.

Table 2-4. On-Line Sources of Oil and Gas Production Data for WRAP States

State	Online data location
AK	http://www.aogcc.alaska.gov/publicdb.htm
AZ	http://www.azgs.state.az.us/publist_3.htm
CA	http://www.consrv.ca.gov/dog/prod_injection_db/index.htm
CO	http://www.oil-gas.state.co.us/
MT	http://bogc.dnrc.state.mt.us/eEIMS.HTM
NV	http://www.nbmq.unr.edu/lists/oil/oil.htm
NM	http://www.emnrd.state.nm.us/ocd/
ND	http://www.state.nd.us/ndqs/Publication_List/avail_ndg_h.htm
OR	http://www.oregongeology.com/oil/oilhome.htm
SD	http://www.state.sd.us/denr/des/mining/oil&gas/producti.htm
UT	http://ogm.utah.gov/oilgas/DOWNLOAD/downpage.htm
WY	http://wogcc.state.wy.us/

Statewide emission factors were developed for various sources/processes in the Wyoming inventory. These emission factors were expressed as either mass of emissions per well or per unit production. The methodology, however, anticipates the use of field-specific emission factors in recognition of potentially wide differences in the number and types of equipment among different oil/gas fields. For the other WRAP states, the contractor will evaluate the applicability of these factors in consultation with local agencies and commissions and if appropriate, use them to update the existing inventories. If feasible, the contractor will work with the agencies to develop custom emission factors for their state. Opportunities for controls are present for storage tanks, heaters, and dehydrators. Storage tanks, for instance, may be controlled using flares, incinerators, or internal floating roofs. The effects of controls will be accounted for either directly during the emission factors estimation or as factors to be applied.

Some form of the Wyoming methodology may be recommended for implementation to improve existing oil and gas emissions inventories. However, not all elements of a particular inventory will require a full overhaul. Once the available data have been reviewed, the contractor will discuss the proposed overall approach for improving the oil and gas inventories with the SSJF, and will then implement the agreed-upon approach to update the existing inventories.

Projection Methodology and Future Year Inventories

The contractor will propose and implement projection methodologies to estimate 2018 emission levels for this source category. While the trend in state-level oil and gas production volumes may be predictable using historical production data and other indicators, estimating county-level emissions is more challenging for a number of reasons. Most significantly, individual well owners/operators can change quite often over the life of the well, and over time some wells will reach their useful life and be closed while other wells will be newly established. Any attempt at estimating future year county-level emissions, especially using well-specific data, should attempt to account for the total number of wells, where they are located, and how likely they are to continue producing.

To develop 2018 oil and gas projections, the contractor will review available historical oil and gas production data, and also DOE and industry projections of future year production. The historical trends and projections will likely be available by state and by oil field, but not by county. The

contractor will review available data and propose projection methods for discussion with the SSJF Oil and Gas work group, including methods for allocating State or field-level projections to counties. Anticipated controls will also be factored in once the emissions are estimated.

Task 1.C – 2018 Emissions Projections

The development of projected point and area source emissions for all visibility impairing pollutants for the year 2018, follows the review and revision of the current 2002 emissions inventory under Subtask 1.A, as well as the incorporation of an updated oil and gas source emissions inventory under Subtask 1.B. The results of the 2018 emissions projections will then be used to support the projected future year control strategy inventories to be developed under Task 2. The Contractor will develop the projections at the state-, county-, and tribal-level for the 14 WRAP states. Also, projections will be obtained for the nine CENRAP states.

Review Previous Projections, Models, Data

In preparing the projection methodology, the Contractor will thoroughly review previous methodologies, data sources, assumptions, and economic and emission models utilized by the WRAP and other RPOs. Some examples of what will be reviewed include electricity generation forecasts from the Market Trading Forum (MTF), previous IAS and EGAS modeling inputs and assumptions, and current population forecasts. Some additional growth factor information may need to be collected from other sources (e.g., energy projections from the U.S. Department of Energy, livestock projections from the U.S. Department of Agriculture, projected activity for copper smelters, etc.)

The beta version of EGAS Version 5.0 was released on October 28, 2004 by U.S. EPA for review by potential users. At the present time, it is not clear whether a public version of EGAS Version 5.0 will be released by U.S. EPA in time for use in this project. If the public version of EGAS Version 5.0 is available, then it will be used to develop growth factors. If the public version of EGAS Version 5.0 is not available, then the beta version of the model will be used while taking into consideration any problems or issues identified during the beta review. One known shortcoming of the EGAS and the underlying national REMI models is that the growth factors are developed and reported at the state-level. However, this level of reporting does not always accurately depict variations in industrial activity at the county-level, particularly for large industrial states. The Contractor will comment on the accuracy and precision of using EGAS Version 5.0 (with REMI) and may propose options for increasing the level of resolution and accuracy of the REMI input (e.g., developing a REMI-WRAP model with better-than-state-level resolution). The Contractor should consult with the WRAP Economic Analysis Forum (EAF) to understand the common/different needs of economic data by that forum.

Set Priorities

Because of the importance of NO_x and SO₂ emissions in the WRAP region, particular attention has been given in previous projected inventories to the largest NO_x and SO₂ sources (i.e., EGUs). The Contractor will solicit input from the projections work group concerning any other particular point source types (in addition to EGUs) that require additional attention.

Develop Projection Variables

Using knowledge from the previous assessment and priority steps, the Contractor will develop several projection variables as follows:

- C Demographic growth rates – these will be developed by extracting the population projections from the EGAS Version 5.0 model. Where applicable, more recent state-generated population projections will be used to supplement the EGAS population projections.
- C Economic growth rates – these will be developed by compiling economic growth factors from EGAS Version 5.0. Additional data for a few specialized sectors (e.g., energy, agriculture, primary metal production, etc.) will be developed through interviews with regulatory agencies and industry experts.
- C Retirement rates for existing sources – these will be extracted from the updated IAS model and reviewed. Also, the various state agencies and SSJF industry contacts will be consulted to improve/replace these estimates.
- C New (expected) sources, location and fuel use – Projected new sources will likely be limited to those sources that have been built since the base year (i.e., between 2002 and the present), sources that are currently being built, and sources that are currently undergoing permit review with federal, state, local, or tribal regulators that will likely be built.
- C Emission reductions expected from known future federal, state, local, and tribal air quality requirements – these emission reductions will be developed by reviewing existing regulations that apply and discussing future regulations with Federal, State, Local and Tribal authorities, mainly as contained in the SIPs for various pollutants. The Contractor should consider pollution prevention strategies being implemented by states (e.g., CO and CA), which will impact energy forecasts. (Note that a memo documenting these findings will be submitted as a separate deliverable.)

Develop Draft Methodology Report

After conducting the steps above, including assessing models and data, and developing initial projection variables, the Contractor will document these procedures and findings in a draft report. ERG will submit this methodology report for review to the WRAP SSJF projections work group, and make any necessary changes in the proposed method and/or projection variables prior to developing the 2018 projections inventory.

Develop 2018 Projections Inventory

Following approval of the methodology report and projections variables, the Contractor will implement the approved methodology and develop the draft 2018 emissions inventory. The inventory report will contain detailed facility-level emission estimates for individual EGUs, and any other significant point sources designated by the projections work group. Sector-level emission estimates by county will be prepared for the remaining point and sources. Likewise, sector-level area source emission estimates will also be included. The inventory report tables for both point sources and area source categories will present 2002 base year and 2018 future year emission estimates; all growth, retirement, and control factors used; assumptions; and data source references.

The 2018 projections inventory will be thoroughly quality-checked prior to submittal of the draft and final result using several techniques. First of all, state-level comparisons of the 1999 and 2018 inventories will be conducted. Also, sector-level comparisons of the 1999 and 2018 inventory will be conducted (e.g., EGUs are expected to be the largest NO_x and SO_x sources in the 2018 inventory). Finally, the ratio of 2018 emissions to 1999 emissions will be calculated for all point sources and area source categories in order to focus further investigation and confirm appropriate growth/control factors and assumptions were applied (e.g., 1.0 implies no growth, 0.0 implies the sources was shut down).

The draft 2018 baseline emissions inventory results (in both tabular and graphical formats) will be submitted to the projections work group for their review. The report will include documentation of methods, projection factors, other data and assumptions used, and references. Following this review, the contractor will address all relevant comments, make adjustments as necessary, and submit the final 2018 baseline emissions inventory report. Electronic versions of the calculational spreadsheets will also be submitted with the final report.

Input 2018 Baseline Projections Into WRAP EDMS

Based upon the approved draft 2018 baseline inventory, the Contractor will convert the inventory into NIF format, and input the file(s) into the WRAP EDMS. After input to the EDMS, the Contractor will perform quality assurance of the batch-upload to ensure that all of the emissions were correctly imported into the EDMS. Quality assurance would be performed by running a variety of reports (both standard and ad-hoc) and comparing these against the original data files for the 2018 baseline inventory.

Task 2: Control Technology Analysis

Task 2 involves taking the baseline 2018 inventory and exploring the effects of implementing various control strategies on regional emissions. The Contractor will provide information on control options including costs, control efficiencies and other impacts. The Contractor will draw upon the previous work of the WRAP SO₂ Annex and the characterization of NO_x and PM controls in *Summary of Emission Controls Available for Large Stationary Sources of NO_x and PM*, dated June 30, 2003. The Contractor will provide additional information and refine existing analyses as needed in an effort to provide support to the WRAP in developing stationary source control programs.

For each one of the Task 2 subtasks, the Contractor will prepare draft and final reports for SSJF review and approval. The documents will summarize the issues addressed in the subtask, provide the control options considered, and summarize all data collected, assumptions made, methods used, and results arrived at. This task will also result in three to five control strategy inventories. These inventories will be “what if” scenarios assuming different control strategies and using the projected baseline year of 2018.

Task 2.A: Sulfur Dioxide

The WRAP SO₂ Annex represents a very significant amount of work conducted by the WRAP over several years. For five western states (AZ, NM, OR, UT, and WY), it establishes an emission reduction goal for 2018 with interim milestones every five years starting in 2003. The emission goal is

based on the emissions that would be reduced if BART were applied to all BART-eligible sources in the five states.

Under Task 2A, the Contractor will expand the SO₂ Annex to the eight states currently not included in the Annex (CA, WA, NV, MT, ND, SD, ID, and CO). This task will focus on defining the primary SO₂ source categories in the states; preparing guidance on the appropriate emission technologies for SO₂ reductions for the primary source categories; developing information necessary to set an emission reduction goal and milestones; and evaluating various control strategies and their effect on regional SO₂ emissions.

Source Categories

In this task, the Contract will review the 2002 inventory contained in the WRAP EDMS to identify the sources (and their source categories) that emit greater than 100 tons per year (tpy) of SO₂. Summaries will be prepared of the source categories that represent the largest number of sources and/or the largest quantity of emissions, in order to prioritize the source categories.

In the SO₂ Annex, WRAP determined the sources that are BART-eligible and focused on the corresponding BART categories. The Contractor will conduct this type of analysis for the eight states. However, in addition the Contractor will consider the source categories that emit the most SO₂ so that information will be available to determine effective SO₂ emission reduction strategies.

Based on work currently being conducted for the SSJF BART working group, there are 17 BART source categories that exist in the 8-state area. The Contractor will use the findings of this workgroup to determine BART-level controls for this 8-state area. In addition, the Contractor will review recent practices in relevant industries.

Control Technologies

The Contractor will review the findings of Task 1 (i.e., refined 2002 inventory, additional control data, control technologies currently in place and their reduction efficiencies) and group like unit-control combinations by source category in order to determine the range of starting points that exist and which situations are more common. Also, the Contractor will review the SO₂ Annex for retrofit options on a source category basis, and determine if any new control technologies have become available since the Annex was developed that can now be added to the list. The Contractor will also review the costs and emission reduction ranges assigned to the control technologies to determine if new information is available that would indicate these values should be refined.

Emission Reductions

The Annex assigned various levels of control to the sources in the database based on existing controls and a scheme that took into account life remaining on the existing controls and level of emission reduction in place. The Contractor will discuss this method with the SSJF as appropriate and propose new strategies that may be better based on what is learned through the course of this project.

The emission reductions associated with applying BART will be calculated for the year 2018, as was conducted for the Annex. The 2018 baseline emissions database prepared in Task 1 will be used. The controls and corresponding emission reductions will be assigned to the BART-eligible units in that database and emission reductions from the 2018 baseline emissions will be calculated.

Evaluation of Control Strategies

In conjunction with the SSJF, the Contractors will develop control strategies for the 8-state region to reduce SO₂ emissions in the area. Costs of controls as well as emission reduction potentials to develop SO₂ emission reduction options for the region will be examined. The Contractor will review the sources that emit greater than 100 tpy of SO₂ and develop summary statistics to highlight where reductions can be made that will be the easiest and least costly to attain. It will be important to work both sides of the cost effectiveness equation – cost and emission reductions – on a regional scale.

Task 2.B: Nitrogen Oxides from EGUs

In this task, the Contractor will review the previously prepared WRAP 2003 document, *Summary of Emission Controls Available for Large Stationary Sources of NO_x and PM*, and determine if there have been any new controls that need to be added or if there are any refinements that can be made to emission reductions or cost information.

The Contractor will expand the information regarding the control options for coal burning utilities and provide more details on retrofit considerations including the limitations of the control equipment as a function of boiler configuration, boiler size, shape, and the type of coal burned. For instance, furnace geometry, size, and accessibility are important considerations in the determination of appropriate combustion control techniques and expected emission control performance.

For each control measure identified in the 2003 document, the Contractor will review the literature regarding issues with retrofitting controls at existing coal burning utility boilers. Industry stakeholders and state contacts will be interviewed to collect any concerns or issues they have encountered regarding retrofit considerations. The Contractor will summarize this information in the document prepared for this task.

NO_x emission reductions achieved through combustion techniques are also affected by carbon monoxide limits that are included in permits and/or regulations. By limiting the carbon monoxide, regulators are assuring good combustion of volatiles, but are also reducing the operator's ability to limit NO_x emissions as some NO_x combustion control technologies may result in increased carbon monoxide emissions. The Contractor will discuss this with state and EPA representatives, and industry and environmental stakeholders to collect the information available and assess regulatory and stakeholder concerns. The deliverable for this task will include a summary of the information collected and the resources used.

Based on the controls in place as refined in Task 1, the Contractor will determine the various process unit-control combinations that exist. For each of the unit-control combinations, the Contractor will develop a detailed list of control options taking into consideration the boiler configuration, size, shape and the coal burned. The list will include the control technologies and emission reductions that are reasonably possible for given unit-control combinations, the boiler configuration, size, shape, and the coal burned. Using these control options, control strategies will be developed for each existing unit-control combination. In assigning the emission reductions for each control technology, the Contractor will also consider any applicable current or future carbon monoxide limits. Strategies could include all utility boilers controlled at the highest possible level; controls applied that would result in the lowest cost; or controls that are considered the most likely BART level of control applied to BART-eligible

units. The Contractor will discuss the possible options with SSJF to determine the control strategies that should be applied.

For each control strategy chosen, the Contractor will assign the new control schemes to the boilers based on the existing controls in the projected 2018 inventory so that emission reductions for each control strategy can be calculated.

Task 2.C: Nitrogen Oxides from Other Sources

In this task, the Contractor will develop NO_x control options for non-EGU sources. Non-EGU contributors to NO_x emissions include emissions from industrial fuel combustion, including boilers and internal combustion engines; the petroleum industry; mineral products industry, which is a large group including asphalt, glass, cement, lime, and phosphate rock industries; and the oil and gas production processes. The Contractor will consult with the SSJF to determine the source categories for which control options need to be developed. Obvious candidates are industrial boilers, the petroleum industry, the mineral products industry, and oil and gas production. Once the source categories to focus on are chosen, the Contractor will develop control options considering the NO_x controls identified in the 2003 *Summary of Emission Controls Available for Large Stationary Sources of NO_x and PM*.

For those source categories not included in this document, the Contractor will prepare a list of available retrofit control technologies. The control measures will include pollution prevention measures, add-on controls, and a combination of the two, as appropriate. These candidate control measures will be determined by reviewing the information available such as a search of the RACT/BACT/LAER Clearinghouse (RBLC) and any State or Local BACT guidelines that are available, interviews of vendors, and reviews of construction permits, technical journals or reports, and Department of Energy and EPA technical reports. The Contractor will also consider retrofit design changes or methods for getting incremental reductions for emission sources that have existing control measures. The Contractor will determine all the feasible and demonstrated control technologies; and will evaluate the cost and other impacts for these technologies and document these in the report for this subtask.

The Contractor will develop emission control strategies for NO_x reduction for the region. As with the previous subtasks under Task 2, the strategies will be different options to efficiently achieve the most emission reductions.

Task 2.D: Other Pollutants

In this task, the Contractor will review the sources of VOC, PM, and ammonia emissions. These emissions will be summarized by source category and location. This summary will include identification of any controls currently in place as well as any effect of NESHAPs that must be complied with in the future. This summary will be prepared to highlight the larger sources of these pollutants especially those that are uncontrolled but where cost effective controls maybe applicable. This information will be presented to and discussed with the SSJF. In conjunction with the WRAP, the contractor will identify source categories of interest and control strategies will be developed and investigated.