**VISIBILITY IMPROVEMENT - STATE AND TRIBAL ASSOCIATION OF THE SOUTHEAST**

**REGIONAL PLANNING ORGANIZATION OF THE SOUTHEAST**

**MULTI-YEAR WORK PLAN**

**Original Completed: June 30, 2000**
**Revised: August 24, 2001**

On June 30, 2000, Southeastern States Air Resource Managers (SESARM) submitted to the United States Environmental Protection Agency (EPA) a multi-year work-plan for regional haze activities associated with FY1999 federal funding. Over the last year, States and Tribes in the southeast have worked together to create the collaborative effort known as Visibility Improvement - State and Tribal Association of the Southeast (VISTAS). VISTAS has been charged with planning regional haze activities for the southeastern United States. SESARM is, and will continue to be, the organization receiving the federal funding for VISTAS activities.

The June 30, 2000, work plan is being revised and the grant application amended to merge the FY1999 and FY2000 grants into one grant and work plan. It is anticipated that this grant will fund certain VISTAS activities, as identified in this work plan, through December 31, 2003. Total federal funding associated with this grant and work plan is $900,000.

## A. Organizational and Intergovernmental Coordination

Estimated Budget: $120,000
Proposed Completion Date: December 31, 2003

The states of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia and the Eastern Band of the Cherokee Indians entered into a Memorandum of Understanding and approved Bylaws to collaborate on regional haze planning activities. States and Tribes are equal members of the collaboration. Currently, only the Eastern Band of the Cherokees meets eligibility requirements (Tribal Clean Air Act Authority), but if others meet this requirement in the future, they will be included as equal members. Local Air Programs within EPA Region 4 are also included in VISTAS. Federal entities serve in an advisory role to VISTAS. These federal entities are: the U.S. Environmental Protection Agency, the National Park Service, the U.S. Fish and Wildlife Service, and the U.S. Forest Service. Environmental organizations, industry groups, federal agencies, and other stakeholders, though not as voting members, have been asked to actively participate at the workgroup level to provide input and feedback into workgroup efforts.

VISTAS will organize full meetings of VISTAS region States, Tribes, federal agencies, industry, public interest groups and others involved in the regional planning process at least annually, but as often as necessary to conduct VISTAS business. The purpose of these meetings will be to ensure that VISTAS participants are informed of major developments related to regional haze.

They will also be used to discuss goals and objectives. VISTAS workgroups (which include representatives of States, Tribes, federal agencies, industry, and public interest groups) shall hold conference calls and organize meetings as necessary to ensure that VISTAS activities and tasks are accomplished.

Another component of this task involves evaluating mechanisms to coordinate the inter-regional component of visibility planning. EPA guidance calls for the four regional haze planning organizations in the East to meet on a regular basis to coordinate their visibility planning efforts. VISTAS shall participate in any meetings held for the eastern regional planning organizations. VISTAS shall also work on efforts to coordinate regional planning activities, including collaboration on projects and training.

Additionally, VISTAS will coordinate with EPA's Office of Air Quality Planning and Standards, and the other Regional Planning Organizations, in planning two joint meetings annually. VISTAS shall host one of the joint meetings of the regional organizations during this grant period, if appropriate.

VISTAS anticipates costs will be incurred through December 31, 2003, for this task. Funding will be used for acquiring meeting space, developing meeting materials holding inter-regional technical staff meetings, and other meeting preparations. Travel expenses to attend these meetings may also be incurred (in accordance with VISTAS bylaws). Where appropriate, contractor(s) shall be hired to assist with completion of this task.

**B. Development of a VISTAS Web Site**

Estimated Budget: $15,000
Proposed Completion Date: December 31, 2001
Monthly costs through December 31, 2003

To facilitate communication among VISTAS participants and to provide information to the public, VISTAS will develop and maintain a public Internet web site. The web site will provide updated and timely information to its users. The web site will be attractive, functional, and easy to use and navigate. The public web site shall be linked to and provide access to technical data, reports, and maps related to the modeling, monitoring and emission inventory efforts of VISTAS. Where appropriate, contractor(s) shall be hired to assist with completion of this task.

**C. Technical Experts on Aerosol Modeling, Atmospheric Chemistry and Meteorology**

Estimated Budget: $ 100,000
Proposed Completion Date: December 31, 2001
Continuing costs through December 31, 2003

While States have experience with ozone modeling, they have very little experience in more complex modeling such as aerosol modeling. As VISTAS starts planning for the modeling work that lies ahead, it is important that knowledgeable professionals guide the work. Contracts shall be secured with "Technical Experts" in atmospheric chemistry, modeling, meteorology, etc. to

assist VISTAS workgroups in: selection of modeling domains and episodes; determining which modeling system should be used; clarification of complex issues related to model; prioritization of emission inventory needs; advising VISTAS on best use of resources to fill data gaps in emissions, ambient, meteorological and upper air data; analyzing of simulation modeling results and development of next steps for emissions, meteorology and air quality modeling improvements and peer review of technical products of various contractors. The Technical Experts will also attend Technical Analysis Workgroup and Data Workgroup meetings, regional planning organization meetings, and other meetings as necessary.

**D. VISTAS Executive Staff**

Estimated Budget: $215,000
Proposed Completion Date: October 31, 2002 (additional funding will be necessary to continue funding staff and office space past this date)

In order to effectively respond to federal regional haze and visibility requirements, VISTAS has identified the need for staff to facilitate VISTAS activities. VISTAS shall procure Executive Staff to oversee VISTAS activities and shall acquire necessary office space, equipment and supplies. Responsibilities of the Executive Staff may include, but are not limited to the following:

a. Support the efforts of VISTAS State and Tribal Air Directors (STAD), Coordinating Committee, and workgroups in accomplishing the purposes of the VISTAS.
b. Provide timely and accurate technical support and advice to VISTAS.
c. Develop request for proposals and oversee work under technical contracts.
d. Provide logistical support and coordination of VISTAS annual meeting, STAD meetings, and additional support for other meetings as requested.
e. Ensure advance notice of meetings is provided to VISTAS members.
f. Actively participate in meetings.
g. Assure a written record of all STAD meetings and maintaining records of the minutes and summaries of each general and committee meeting.
h. Make information available to the STAD for presentation to the VISTAS membership.
i. Serve as the primary point of contact between VISTAS and the public.
j. Oversee timely dissemination of information and news of relevance to VISTAS members including summaries of general meetings and committee reports.
k. Ensure maintenance of VISTAS web site and ensure that information on the web site is timely and accurate.
l. Ensure the timely submission of reports and other submittals as required by federal grant requirements.
m. Exercise other duties as requested by the STAD.

**E. Identification of BART sources in the VISTAS Region**

Estimated Budget: $75,000
Proposed Completion Date: October 31, 2002

VISTAS has recognized that identification of BART sources is an immediate need for its States and Tribes. VISTAS will determine BART eligible sources for the VISTAS region for recommendation to the VISTAS States and Tribes for incorporation into the initial planning State and Tribal Implementation Plans (SIPs/TIPs). Identification of these sources will include a comprehensive assessment of Pre-NSPS/Pre-BART, BART and Post-BART sources. Where appropriate, a contractor(s) shall be hired to assist with completion of this task.

## F. Collection and Analysis of Existing Regional Haze Data for the VISTAS Region

Estimated Budget: $250,000
Proposed Completion Date: December 31, 2002

While the regional haze and $PM_{2.5}$ levels in the Southeast have not been comprehensively addressed or analyzed, there is a substantial body of data collected in the past five years relating to $PM_{2.5}$ and visibility. In numerous individual efforts, many entities have collected monitoring data related to $PM_{2.5}$ and its constituents and regional haze including but not limited to individual states, universities, private industry, EPA's OAQPS and ORD, and the Federal Land Managers. Some have also performed modeling related to $PM_{2.5}$ and/or regional haze for certain parts of the ten state VISTAS region (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, South Carolina, Virginia, and West Virginia). Three major research efforts in particular, the Southern Oxidants Study (SOS), Southeastern Aerosol Visibility Study (SEAVS) and the Southern Appalachian Mountains Initiative (SAMI), have collected data useful for assessing $PM_{2.5}$ and regional haze.

Contract(s) shall be procured which:

- Inventory and consolidate the available monitoring and meteorological data relevant to $PM_{2.5}$ and regional haze and their constituents and precursors across the 10 state VISTAS region;
- Evaluate the ability of the available information to adequately characterize the present air quality situation with regard to $PM_{2.5}$ and regional haze;
- Support future modeling recommendations; and,
- Develop recommendations for additional data collection to reasonably address any shortfalls identified.

Although the available data are fragmentary, they should, when reviewed in aggregate, provide a more comprehensive picture of the existing regional haze and regional $PM_{2.5}$ situation than presently exists. These data, combined with meteorological data throughout the VISTAS region, will be used to examine and characterize visibility and regional $PM_{2.5}$.

The following data and information shall be collected:

- $PM_{2.5}$ total mass and speciated data, including data from short-term sampling events;
- $PM_{10}$ data;
- Surface meteorological data: wind speed, wind direction, ambient temperatures, relative humidity, rainfall, air pressure, sky conditions, wetness measures, and visibility;
- Upper air measurements: temperature, dew point, wind speed, wind direction, and mixing

height;
- Measures of visibility including extinction, light scattering and absorption measurements;
- PM precursor monitoring data including: ozone, CO, $SO_2$, NOy species (including NO, $NO_2$, $NO_x$, $NO_y$, $HNO_3$, etc), $NH_3$, VOCs, etc.;
- Data on wildfires and prescribed burning events;
- Level of confidence of data quality for all data collected;
- The site location, the period of sampling, the sampling method and frequency of sampling and any changes to the location, sampling method or frequency; and,
- Any available related analyses or studies of the data and data quality.

All relevant meteorological and monitoring data (raw data, summaries, quality assurance reports, and any analyses) identified above shall be retrieved and organized so that it is can be accessed via the VISTAS web site. Existing formats shall be reviewed and a format(s) adopted or developed for the data collected that is user friendly and easily used by data analysts and modelers. A more comprehensive, systematic archiving approach for future data collection, formatting, storage and retrieval by VISTAS shall be identified. Prior to archiving the data, quality assurance and quality control issues shall be addressed.

The collected information shall be evaluated to determine to what extent it can adequately characterize the present regional air quality situation with regard to $PM_{2.5}$ and regional haze. Additional data collection needed to reasonably address weaknesses, shortfalls and gaps in the data shall be identified. The following questions should be addressed:

- Characterize the meteorological conditions at the surface and aloft that coincide with low, medium and high periods (i.e. approximately the highest 20%, lowest 20%, and middle 60%) of ambient levels of PM, $PM_{2.5}$ and Visibility as well as approximately the highest 5% of the days for $PM_{2.5}$.

- Characterize the composition of the PM during the high, medium and low periods for PM, $PM_{2.5}$ and Visibility and on approximately the highest 5% of the days for $PM_{2.5}$. How does this composition vary by season and by location?

- For the Visibility, $PM_{2.5}$ mass and constituent data and PM precursor monitoring data, characterize and provide insights into: the seasonal variation of the data; the variation geographically across the region and across different terrain (e.g. mountains, coastal plain, inland, piedmont, etc.); and the variation in concentrations due to different land use patterns (urban, rural, suburban, etc.) across the region.

- Characterize and provide insights into the spatial and temporal extent of related ambient levels of Visibility, $PM_{2.5}$ and PM.

- How do ambient levels of Visibility, $PM_{2.5}$ mass and constituent data, and PM correlate with of identified incidents of wildfires, open burning and prescribed burning events?

- How do ambient levels of Visibility, $PM_{2.5}$ mass and PM vary with PM precursor or PM constituent monitoring data across the region?

- Where do the annual concentrations of $PM_{2.5}$ exceed 15 $\mu g/m^3$? Where do they exceed 10 $\mu g/m^3$? Characterize any gradients of concentrations across the region.

- Identify all meteorological monitoring sites in the region (e.g., met observation sites, upper air sounding sites, radar profiler/sodar sites, NWS ASOS surface and upper air rawinsonde data, lidar).

## G. Preparation of Materials for Policy Makers

Proposed Budget: $50,000
Proposed Completion Date: December 31, 2003

States and Tribes are required to submit Initial Planning SIPs/TIPs within one year after their first area is designated attainment, unclassifiable or nonattainment for PM2.5. VISTAS will prepare materials for States and Tribes to assist with this submittal. This material shall include the following: documentation that identifies whether emissions within a state impact visibility in a Class 1 area (using inventory, monitoring, or modeling information), a description of the regional planning process (e.g. VISTAS) which identifies the participating States and Tribes, goals, objectives, management, and decision-making structure; the deadlines for completing significant technical analyses and emission management strategies; and a list of all BART-eligible sources.

VISTAS will also develop other materials as necessary; including but not limited to, a briefing package which presents an executive summary of the various assessments and includes customized portions, which focus on specific implications for each State and Tribe. The presentation shall be multimedia and use PowerPoint or similar display package, and will include animation of modeling and monitoring data. The purpose of this presentation is to give the State and Tribal air technical staff a set of materials that they can use to brief their senior management, other policymakers in the States and Tribes, and public audiences such as advisory boards and legislative committees. Where appropriate, a contractor(s) shall be hired to assist with completion of this task.

## H. Assessment and Implementation of Training Needs and Priorities

Estimated Budget: $75,000
Proposed Completion Date: December 31, 2003

Many of the skills required to prepare a plan submittal will be very specific to PM2.5 or to regional haze and will require a set of skills not all States and Tribes presently have. For instance, the development of an emission inventory for modeling PM2.5 will rely on very specific protocols for estimating numerous precursors and running specific sub models. Similarly the air quality modeling protocol will rely on the use of certain state of the art tools that not all States and Tribes have the skills to use. The purpose of this task is to identify training shortfalls and to provide training to staff in States and Tribes. VISTAS will ensure that

workgroup members are provided the opportunity to develop the skills necessary to support VISTAS activities. This will improve the overall quality of the information prepared by VISTAS. Training shall include, but not be limited to, visibility science, air quality modeling, and emission inventory development. Specific training related to CMAQ modeling and ammonia emissions inventory development has been identified as immediate need. Where appropriate, a contractor(s) shall be hired to assist with completion of this task.

## I. Reporting

Per the John Seitz memorandum entitled, Funding Criteria for Regional Planning Bodies, dated August 27, 1999, quarterly reports shall be submitted to EPA Region 4 outlining accomplishments of VISTAS. These reports shall also include notice of any issues that will prevent tasks from being met on schedule.

## J. Projected Long-Term Efforts

As VISTAS performs the activities associated with the tasks described previously, it will continually review the need for refinements to on-going efforts. Additionally, there are numerous longer-range efforts and funding needs that are anticipated. VISTAS has identified the following efforts designed to support the development of timely, coordinated and effective regional haze State and Tribal Implementation Plans. These longer-range efforts will be sequenced to support the regulatory schedule established in the regional haze rulemaking. The primary objective is to produce a product that assures satisfactory conclusion of the regional planning process according to a schedule that allows for timely State and Tribal Implementation Plan development.

Although the following projections include the best estimate of what is required to meet the regional haze regulatory requirements and the projected cost of implementation, it is recognized that flexibility is needed for adjustments. These adjustments may be necessary to allow for updating and revising the long-term efforts based on knowledge gained and a level of funding that has been clearly established. It is anticipated that these long-term projections will be reviewed and modified regularly.

**YEAR OF EFFORT: FY 01 (October 1, 2000 - September 30, 2001)**
**ANTICIPATED FUNDING LEVEL: $ 1,000,000.00**
**ACTUAL AWARD: $ 500,000.00**

September 30, 2001
VISTAS activities will be well under way. VISTAS members will have attended training and participated in meetings with EPA and other Regional Planning Organizations, and finalized contract for collection and analysis of existing monitoring data analysis. VISTAS will submit a work plan for the federal FY2001 funding of $500,000 to conduct initial modeling activities and other priorities.

**YEAR OF EFFORT: FY 02 (October 1, 2001 - September 30, 2002)**
**ANTICIPATED FUNDING LEVEL: $ 2,000,000.00**

December 31, 2001
BART sources will be identified, a public web site developed and contractors hired to begin review of existing data.

June 30, 2002
What is known and not known regarding regional haze, areas with potential PM 2.5 problems, and data gaps should be identified. Additional monitoring stations will need to be deployed.

September 30, 2002
VISTAS will have participated in meetings with other Regional Planning Organizations to determine joint modeling approaches, base years, projection years, and models to be used. Modeling details, such as how to link domains and issues involving other domains, such as grid size and areas needing a finer resolution will be identified and resolved. Modeling and emission inventory protocols will be developed and peer reviewed.

A characterization report of regional haze in the southeast should be prepared. It should at a minimum include: coordination between all workgroups to review science and situation, calculation of initial baseline (existing data), review of monitoring data/data gaps, initial emission inventory characterization and projections, compliance with various programs, and address BART analysis/determination/ controls. A process for emissions inventory refinement should be developed and implemented.

**YEAR OF EFFORT: FY 03 (October 1, 2002 - September 30, 2003)**
**ANTICIPATED FUNDING LEVEL: $ 2,000,000.00**

December 31, 2002
VISTAS shall acquire models and develop meteorological data; format inventory and develop inventory inputs, and inventory model systems; begin meteorological modeling; begin emissions modeling; and test air quality modeling system with draft meteorological and emissions inputs. Complete monitoring data downloads and complete monitoring data analyses. Run final base-case modeling runs; initiate projection year runs. VISTAS will begin to identify strategies to be analyzed, initiate economic analyses, implement plan to address data gaps, finalize work to identify natural conditions in each Class I Area using existing data, continue data analysis, determine role of and need for special field studies.

**YEAR OF EFFORT: FY 04 (October 1, 2003 - September 30, 2004)**
**ANTICIPATED FUNDING LEVEL: $ 2,000,000.00**

December 31, 2003
Complete modeling runs of potential strategies for each sector individually.

March 31, 2004
Complete economic assessments of strategies for each sector. Assemble strategy packages based on cost, cost effectiveness, and impact assessments of strategies.

**YEAR OF EFFORT: FY 05 (October 1, 2004 - September 30, 2005)**
**ANTICIPATED FUNDING LEVEL: $ 3,000,000.00**

December 31, 2004
Conduct strategy modeling - based on cost, cost effectiveness, and impact assessments - individual sector strategies

March 31, 2005
Determine baseline visibility conditions for each Class I Area based on 2000-2004 data, establish reasonable progress goals for each Class I area, develop monitoring strategy.

June 30, 2005
Refine inputs to fine tune strategy package. Make final adjustments to economic assessments. Complete modeling analysis.

September 30, 2005
Prepare report that makes recommendations regarding appropriate actions States and Tribes should take to address regional haze regionally.

December 31, 2005
VISTAS makes recommendations.

## Summary of Funding and Work Under Federal FY99and FY00 Grant

| Major Task | Proposed Completion Date | Funding Level |
|---|---|---|
| Organizational & Intergovernmental Coordination | December 31, 2003 | $120,000 |
| VISTAS Web Site | December 31, 2001<br>Continuing costs through<br>December 31, 2003 | $15,000 |
| Technical Experts | December 31, 2001<br>Continuing Costs through<br>December 31, 2003 | $100,000 |
| Executive Staff | December 31, 2001<br>Continuing Costs through<br>October 31, 2002 | $215,000 |
| Identification of BART Sources | October 31, 2002 | $75,000 |
| Collection & Analysis of Data | December 31, 2002 | $250,000 |
| Preparation of Materials | December 31, 2003 | $50,000 |
| Training | December 31, 2003 | $75,000 |
| **Total Funding for FY99 & FY00 Grants** | | **$900,000** |