

# **MANE-VU**

Mid-Atlantic/Northeast Visibility Union

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## **Outreach Assessment for the Mid-Atlantic Northeast Region**



**Acadia National Park on a clear day**



**- and on a hazy, polluted day.**

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**January 30, 2002**

*for the*  
Mid-Atlantic/Northeast Visibility Union

## **ABOUT MANE-VU**

The Mid-Atlantic/Northeast Visibility Union (MANE-VU) was formed by the Mid-Atlantic and Northeastern states, tribes, and federal agencies to coordinate regional haze planning activities for the region.

MANE-VU was formed to encourage a coordinated approach to meeting the requirements of EPA's regional haze rules and reducing visibility impairment in major national parks and wilderness areas in the Northeast and Mid-Atlantic region. MANE-VU provides technical assessments and assistance to its members, evaluates linkages to other regional air pollution issues, provides a forum for discussion, and encourages coordinated actions. MANE-VU also facilitates coordination with other regions.

MANE-VU's structure includes a board comprised of state and tribal environmental Commissioners/Secretaries, air program directors and two committees staffed by agency personnel: a Technical Support committee to assess the nature of regional haze, the sources that contribute to regional haze and the technical tools that states will use to develop their programs and a Communications Committee to develop outreach messages and approaches.

Members include Connecticut, Delaware, the District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, the Penobscot Indian Nation, Rhode Island, the St. Regis Mohawk Tribe, and Vermont. Also participating as non-voting members of MANE-VU are the U.S. Environmental Protection Agency, the National Park Service, the U.S. Fish and Wildlife Service, and the U.S. Forest Service.

The Ozone Transport Commission Executive Staff Office provides management and administration for MANE-VU. The Mid-Atlantic Regional Air Management Association (MARAMA) and the Northeast States for Coordinated Air Use Management (NESCAUM) conduct MANE-VU's technical projects.

This report was prepared as a result of work sponsored by the Ozone Transport Commission (OTC). The opinions, findings, conclusions, and recommendations are those of the author and do not necessarily represent the views of OTC. OTC, its officers, members, employees, contractors, and subcontractors make no warranty, expressed or implied, and assume no legal liability for the information in this report. OTC has not approved or disapproved this report, nor has OTC passed upon the accuracy or adequacy of the information contained herein.

## Table of Contents

	Page
1.0 Introduction.....	1
2.0 Audiences .....	3
2.1 States/Regulatory Agencies .....	3
2.2 Elected Officials .....	4
2.3 Media .....	4
2.4 General Public in the MANE-VU Region .....	4
2.5 Industry .....	5
2.6 Potential MANE-VU Partners.....	5
3.0 Partners .....	7
3.1 Tourism Industry .....	7
3.2 Recreation Communities.....	8
3.3 Class I Areas .....	8
3.4 Chambers of Commerce .....	8
3.5 Environmental Organizations.....	8
3.6 Industry and Other Regulated Communities.....	8
3.7 Mass Transit .....	9
3.8 Agricultural Extension Agencies.....	9
3.9 Health Care Industry.....	9
4.0 Messages and Approaches .....	11
4.1 Value of Scenic Views.....	12
4.2 Quality of Life/Health Issues .....	13
4.3 Empowerment .....	13
4.4 Economic Benefits.....	14
5.0 Next Steps .....	15
5.1 Contact the States .....	15
5.2 Reach Out to Partners .....	15
5.3 Identify Messages and Design Outreach Material .....	15
5.4 Create and Distribute Outreach Material .....	17
5.5 Conduct Assessment of Effectiveness of Outreach Material.....	18
6.0 Existing Outreach Material.....	19
6.1 Limitations of the Research .....	20
6.2 Matrix of Documents and Web Pages on Haze.....	20
6.3 Index of Documents and Web Pages on Haze .....	24



## **1.0 Introduction**

This document presents an assessment of outreach activities that the Mid-Atlantic/Northeast Visibility Union (MANE-VU) may utilize to engage audiences in the regional haze issue. Audiences in the MANE-VU region should be concerned with regional haze, which is caused by air pollution, because it reduces visibility and affects the quality of life.

In the Eastern United States and the MANE-VU region, pollution has reduced the visibility range from about 90 miles to between 15 miles and 25 miles. Reduced visibility in the East is primarily due to sulfates in the atmosphere from power plants and other large, industrial sources. Some of the same sources that contribute to regional haze are linked to serious health and environmental effects. For example, exposure to fine particles has been linked to increased respiratory illness, damage to lung tissue, and premature death. Other pollutants that contribute to haze also form ground-level ozone (smog) which can trigger serious respiratory problems.

To address the regional haze issue, the U.S. Environmental Protection Agency's (EPA) promulgated the Regional Haze Rule in April 1999, creating five Regional Planning Organizations (RPOs), including MANE-VU, charged with improving visibility in 156 national parks and wilderness areas. Seven of these EPA-designated Class I areas are located in the Mid-Atlantic Northeast region. MANE-VU intends to develop outreach materials to engage, inform, and educate stakeholders about regional haze and MANE-VU regional planning activities with the end goal of changing behavior to improve visibility in the region.

This document is designed to assist MANE-VU with its development of outreach materials to meet its goal. Specifically, this document identifies appropriate audiences and potential partners. With these stakeholders identified, proposed messages and approaches are provided that would be most effective in reaching them. This report also provides proposed next steps as MANE-VU prepares to launch its outreach campaign.

In addition, existing regional haze outreach materials and activities that have been developed and used in other parts of the country are included as a baseline for determining what part of this information may be effective for the MANE-VU region and the outreach effort.

The document is divided into the following sections:

- 1.0 Introduction
- 2.0 Audiences
- 3.0 Partners
- 4.0 Messages and Approaches
- 5.0 Next Steps
- 6.0 Existing Outreach Material

To gather information on potential outreach activities, a Regional Haze Roundtable was held in Arlington, Virginia, on December 4, 2001. The attendees were selected based on their expertise on the regional haze issue, as well as their range of perspectives. The attendees were:

- Dennis Loman, EPA Region III;
- Tad Aburn, Maryland Dept. of Environment;
- Bob Breen, Acadia National Park;
- Georgia Murray, Appalachian Mountain Club;
- Kathy Daniel, Federal Highway Administration, Office of Planning and Environment;
- Vaughn Verns, Daimler Chrysler;
- Kyle Isakower, American Petroleum Institute; and
- Fergus McClarin, International Ecotourism Society.

The stated purpose of the roundtable was to discuss the following topics:

- MANE-VU's mission in relation to the Regional Haze Rule;
- Audiences and Relevant Messages;
- Holistic View of Regional Haze;
- Health Issues;
- Regional Differences: Eastern versus Western United States Haze Issues and Information; and
- Timing of Critical Issues.

As a result of the Roundtable discussions, the following ideas were provided for MANE-VU to consider:

- Educate the public that visibility impairment is caused by pollution.
- Inform the public that visibility has decreased—the public may not know what they have lost and accept current visibility as the norm.
- MANE-VU should work with States to educate the local citizenry.
- The public should be empowered with small actions they can take to improve visibility.
- Messages should be simple and the facts should be supported by science.
- The economic impacts of reduced visibility should be discussed.
- Visual information is invaluable in a regional haze outreach campaign and there are many vistas in MANE-VU's region to utilize (mountains, city skylines, shorelines, etc.).
- Haze messages should be linked to air pollution issues that the public already understands.
- Address the health impacts caused by haze producing pollutants.

The roundtable attendees provided much guidance and valuable recommendations, which were a major contribution to this report.

## **2.0 Audiences**

When determining which audiences to target, objectives must be clear. MANE-VU intends to educate stakeholders about regional haze and MANE-VU regional planning activities. Also, MANE-VU wants to initiate a “call to action” which includes acceptance of the reality of the damage caused by regional haze, changing behavior to improve visibility in the region, and garnering support for MANE-VU and its activities.

Understanding these objectives, six audiences have been identified as the main stakeholders on which MANE-VU should focus its attention:

- States/Regulatory Agencies
- Elected Officials;
- Media
- General Public in the MANE-VU Region;
- Industry; and
- Potential MANE-VU Partners.

By focusing on these audiences, it is believed that MANE-VU can reach a broad spectrum of people and leverage its resources while implementing its outreach activities.

### **2.1 States/Regulatory Agencies**

The regulatory agencies are viewed as the primary audience to whom MANE-VU should focus its attention. It is recommended that MANE-VU provide three types of outreach assistance to these agencies:

- educational material created to inform and educate State and regulatory personnel about the elements and progress of the Regional Haze Rule;
- technical documents to assist the agencies with their requirements; and
- pre-made outreach material that the agencies can disseminate to the local audiences.

Regulatory agency personnel tend to be overwhelmed with many tasks, thus MANE-VU has the opportunity to create targeted material that will educate agency personnel on pertinent haze issues. In addition, MANE-VU could provide technical documents, such as model language and case histories about actions taken in other States, to assist State and regulatory agencies in meeting their requirements under the Regional Haze Rule. Specifically, MANE-VU could provide model SIP language and host work groups.

MANE-VU also could assist State and regulatory agencies with local outreach campaigns by creating and providing professional-grade educational materials—brochures, fact sheets, and frequently asked questions—for local distribution. Other materials could include boilerplate newspaper ads to run in local papers, or a quarterly newsletter. By providing this service to the State and regulatory agencies, MANE-VU leverages resources for all agencies involved and broadens its audience scope because the receiving agencies can disseminate the “ready-made” information to local citizens.



However, prior to launching into the task of creating technical documents and education outreach material, MANE-VU should conduct a more targeted survey of State and regulatory agencies to determine exactly what documents would be most useful.

## **2.2 Elected Officials**

Elected officials also are a main audience for MANE-VU's outreach efforts. By educating elected officials about haze and MANE-VU's activities, MANE-VU has an opportunity to garner political support that could influence future policy. Elected officials can be engaged with materials that stress how haze-causing pollutants have an adverse effect on local economies by decreasing tourism and increasing health care costs.

## **2.3 Media**

The media will primarily be a tool for MANE-VU to reach out to the general public. However, initially, the media should be an audience. Media includes television, radio and print on all levels (national to local) and can either be public or private. Early outreach to the media should include materials to educate them about regional haze, causes and solutions of haze, other effects caused by haze-producing pollution, who MANE-VU is and its mission, and details about MANE-VU activities. This outreach should be savvy to the media's needs. Journalists usually work under tight deadlines and are interested in "story ideas." MANE-VU's education of the media should be guised in the form of story pitches that journalists can quickly turnaround. This approach not only informs the media about MANE-VU and its mission, it also facilitates MANE-VU's outreach to the general public through the media.

## **2.4 General Public in the MANE-VU Region**

The general public is a broad audience category. However, the audience is subdivided into more manageable segments based on audience needs. MANE-VU should focus its outreach on:

- schools;
- health care community;
- recreation community; and
- homeowners.

***Schools:*** With the proper educational material, schools can be a powerful resource for MANE-VU's outreach campaign. School districts are defined and schools are limited in number; thus reaching the audience is not complicated. However, engaging children, who ideally will transfer the information home to their parents, may be complicated. It would be essential for MANE-VU to conduct research on what age child is appropriate to receive a haze/air pollution message, what context (information and format) will interest them, and what proactive steps they (the children) can do to help (e.g., children can take home check lists of small things people can do in their home to combat regional haze).

***Health Care and Recreation Communities:*** Health care and recreation communities have been identified as audiences because they have vested interests in the haze issue. The health care community is already aware of the effect of air pollution on the lungs.

The American Lung Association has provided much research on the effects of ozone and particulate matter on sufferers of asthma, children, and the elderly. To engage the health care community in MANE-VU and its activities, the message would have to focus on health effects caused by air pollution, and not on visibility per se. This issue is discussed in greater detail in section 4.0.

The recreation community—comprised of hikers, mountain climbers, skiers, mountain bikers, campers, etc—was recommended as a key audience because their lifestyle places them in the position to see the damage to vistas caused by haze. While messages would be “preaching to the choir” as it were, engaging them through a preservation/ “What you can do” campaign could be useful to MANE-VU’s long-term goals. MANE-VU should engage this community through a partnership with recreation communities, which is discussed in section 3.0.

**Homeowners:** The fourth subgroup of the general public is homeowners (also includes renters). This audience is a critical audience for MANE-VU if the RPO plans to change behavior as part of its long-term goal to improve visibility. Engaging the homeowner audience can be much more difficult and costly than the other audiences because they are not a defined community like health care or government agencies. However, using the Ad Council has been recommended for reaching this subgroup. Careful crafting of a message is essential because homeowners may react negatively if they perceive that improving haze will increase their utility costs.

It is recommended that the general public audience be targeted through the States. By working with the States as discussed in section 2.1, MANE-VU may avoid some difficulties in reaching the general public.

## **2.5 Industry**

Industry, as a stakeholder in the Regional Haze Rule, is an important audience. Industries, such as the utility industry and transportation, are the regulated community; therefore, significant changes in visibility will be attributable to changes in industry practices. MANE-VU should devote part of its outreach activities toward this audience. Outreach efforts should inform industry about the Regional Haze Rule, what industry is required by law to do, the enforcement practices in the MANE-VU region, and any assistance MANE-VU determines it will provide to assist those industries that are cooperative. Industry is also listed as a potential partner, which is discussed in section 3.6, Industry and Other Regulated Communities.

## **2.6 Potential MANE-VU Partners**

Because potential partners will serve as message intermediaries, they also are an audience for MANE-VU. This audience (discussed in more detail in section 3.0) offers MANE-VU the ability to reach even more stakeholders that are specific to each partner. By creating outreach material with the potential partners, MANE-VU can encourage partnerships and provide these partners with information to be disseminated to its members or audience.



### **3.0 Partners**

As discussed in section 2.0, partners who are interested in regional air quality are critical to helping MANE-VU leverage its resources. Partners can range from groups that have an interest in regional haze or the public health effects of regional air pollution, to industry groups, who may be approached to work with MANE-VU in meeting the Regional Haze Rule requirements through cooperation. For partnering, specific groups have been identified who can help spread MANE-VU's message, including:

- Tourism Industry;
- Recreation Communities;
- Class I Areas;
- Chambers of Commerce;
- Environmental Organizations;
- Industry and Other Regulated Communities;
- Mass Transit;
- Agricultural Extension Agencies; and
- Health Care Industry.

Partnering will provide cost-effective communications, networking opportunities, and increased credibility to MANE-VU's mission. Partners can disseminate MANE-VU's message and outreach materials to their constituents, which will effectively broaden the audience to be reached by MANE-VU. An added benefit for all parties is that MANE-VU can work with the partners to create a public partnership media campaign that gives positive advertisement to the partners and spreads MANE-VU's message.

#### **3.1 Tourism Industry**

The tourism industry has a unique perspective. Tourists select a destination based on their perception of the value of the destination. This value can be affected by visibility, especially when visibility is decreased. For example, many international travelers are shunning Southeast Asia because of the haze caused by forest fires in the region, according to Roundtable participant Fergus McClarin from International Ecotourism Society. Tourists tend to be less inclined to select destinations where air quality is poor.

In this respect, the tourism industry could prove to be a valuable partner for MANE-VU. MANE-VU could engage major tourist areas in the Mid-Atlantic Northeast region to work with the RPO to conduct research to determine if haze has had a negative effect on tourism. This information would be valuable to both partners.

If it is determined that tourism has decreased, which decreases revenue in the areas, then MANE-VU could work with the tourism industry to encourage behavior to improve haze conditions, such as urging mass transit over automobiles. Drawing the connection between tourism trade and haze can position MANE-VU to partner with tourism centers to launch an issues campaign, which should help all involved. Sharing the funding of such an issues campaign also would be a benefit to MANE-VU.

### **3.2 Recreation Communities**

Recreation communities, identified as a main audience in section 2.0, can be reached most effectively through partnerships with MANE-VU. Initially, MANE-VU should conduct research to identify those recreation communities that are already organized and active in environmental issues, like the Appalachian Mountain Club. It also is wise to consider all types of outdoor recreation. For example, hunting clubs are not an obvious choice, but members tend to be very organized, environmentally active, and preservationists who pass the tradition down to their children. In addition, most clubs have large memberships that can be reached. MANE-VU also could consider partnerships with private recreation industries, like Coleman Camping or Eastern Mountain Sports.

This community can be engaged based on the value they place on vistas and their lifestyles. Engagement could include grassroots campaigns to improve visibility through lobbying lawmakers, challenging “polluters,” participating in research, and raising awareness in their communities.

### **3.3 Class I Areas**

Class I areas are obvious partners for MANE-VU because the Regional Haze Rule directly charges RPOs to improve visibility in the Class I park and wilderness areas. Through partnering with these areas, MANE-VU can request advertising space to educate visitors to the areas, conduct research, and collect surveys from visitors about visibility.

### **3.4 Chambers of Commerce**

Partnering with Chambers of Commerce would be a logical progression after working with the tourism industry, discussed above. If haze has decreased tourism, which decreases revenue in the areas, then MANE-VU could approach the Chambers of Commerce and convince them that it is in their best interest to partner with MANE-VU to address this issue.

### **3.5 Environmental Organizations**

Environmental organizations can be a useful partner for MANE-VU. However, as will be discussed in section 4.0, the environmental message is not the strongest message for MANE-VU; thus environmental groups should not be a major focus in the partnering request. Nevertheless, they are still valuable and do have active memberships for which environmental issues are important. Locating groups for which haze and visibility is a concern, like Clean Air Task Force or Scenic America, is a first step. To broaden the types of environmental partnerships, MANE-VU could couch its issue in the umbrella of air pollution in general, which could then interest groups like the Sierra Club, who have larger memberships.

### **3.6 Industry and Other Regulated Communities**

As the regulated community, utilities could be a powerful partner for MANE-VU, not only in fostering cooperation to meet the requirements of the Regional Haze Rule, but also in implementing an outreach campaign to homeowners. Ideally, utilities could work

with MANE-VU to provide a “service announcement” about conserving energy, which improves visibility as well as decreases consumer energy costs. Utilities could send this announcement out in a series of correspondence with its customers.

MANE-VU should not limit itself to just one regulated community, however. Other industry groups that contribute to haze may prove to be more useful and cooperative because they are not the primary focus of the regulation. For example, the automobile industry may be willing to partner: Ford Motor Company has a program entitled “Environmental Initiatives” that encourages fuel economy and improved emissions. If direct partnerships with regulated industries are not feasible or desirable, industry organizations such as the American Petroleum Institute (API) can serve as third-party partners with MANE-VU.

Another example is the Department of Energy’s (DOE) “Clean Cities” program, which encourages alternative fuels and alternative fuel automobiles. Although DOE is a federal agency and not a regulated industry, partnering with the agency in this specific program aimed at transportation may be helpful to MANE-VU’s goal.

### **3.7 Mass Transit**

Transportation contributes to the haze problem in MANE-VU’s region. MANE-VU could forge partnerships with mass transit programs to encourage alternate transportation. For example, MANE-VU could approach mass transit operations for advertising space in train and bus stations to inform and encourage higher ridership. MANE-VU also could share the costs of advertising with transportation authorities to spread the word about the visibility benefits of mass transit.

### **3.8 Agricultural Extension Agencies**

Agricultural activities and farming can contribute to air emissions and reduced visibility. Therefore, it would be prudent for MANE-VU to reach out to the agricultural community. Most counties in the region have Agricultural/Cooperative Extension Agencies, which are usually linked with a State University and have community educators on staff. These agencies may provide a venue for disseminating information, because most have working relationships with the farming community

### **3.9 Health Care Industry**

As discussed in section 2.0, the health care community already is aware of the effect of air pollution on lungs. While this industry would not be strictly interested in MANE-VU’s mission of improving visibility, they can be engaged to assist MANE-VU under the larger issue of air pollution. Partnering with the American Lung Association, who has done much outreach on air pollution’s effects on sufferers of asthma, children and the elderly, would be a beneficial alliance for MANE-VU. Because children and the elderly are adversely affected by air pollution, other groups to consider include pediatric groups and the AARP (formally known as the American Association of Retired Peoples).



## 4.0 Messages and Approaches

When delivering a message, timing is everything. MANE-VU should consider the sales effect of its messages on regional haze. Visibility varies with the seasons and is generally worse in more humid conditions. Thus MANE-VU should consider issuing “value of scenic views” messages during the hotter, more humid months when visibility is more impaired. In addition it is recommended that MANE-VU align its haze issue with the ozone campaign. MANE-VU can seize upon the publicity that ozone receives in the summertime and educate people about haze during the same time because “red” ozone days also tend to be poor visibility days. Again, this approach would require timing the issuance of the haze message around the “ozone days” in the summer.

Issuing this type of joint haze/ozone message is part of a message framing concept that is recommended for MANE-VU’s outreach campaign—the air pollution umbrella message. The general public may not differentiate between ozone, particulate matter, and haze. For many in the general public, it is all air pollution. This can be an advantage for MANE-VU. Using an umbrella approach where air pollution is discussed in general, haze messages can be linked to issues that people are already aware of, such as ozone. Using the general concept of air pollution, MANE-VU will not need to embark on a new education campaign, but can align haze issues with existing public knowledge on air pollution.

Beyond the timing of “selling” the messages, MANE-VU also should consider the need for phased messages. Because the Regional Haze Rule is a phased approach, MANE-VU may not need to present all the information at once—it can educate the audiences as activities warrant. By phasing the information, MANE-VU can avoid overwhelming its audiences and better leverage its resources.

Keeping the issue of timing in mind, MANE-VU needs to develop the specific messages. As discussed in earlier sections, MANE-VU must carefully craft its messages to reach each of the intended audiences. Four themes for the messages are presented as the most viable for MANE-VU in achieving its outreach goals:

- Value of Scenic Views;
- Quality of Life/Health Issues;
- Empowerment; and
- Economic Benefits.

In general, there are a few points MANE-VU should keep in mind when creating outreach materials. First MANE-VU needs to clearly define regional haze. This should be discussed through facts—the what, where and why components should be explained in simple detail. When presenting the facts, MANE-VU should be careful not to overwhelm or scare the audience. In addition, the science presenting haze issues and visibility impairment must be credible. The scientific facts should be supportable and agreed to by the scientific community. It should be noted that the science of modeling meteorological



data and chemical reactions is not well developed and is not well understood by many in other audience groups, which may cause a problem for industry stakeholders.

MANE-VU should briefly discuss the Regional Haze Rule and its phased process. Information on the rule is not needed upfront in outreach materials, but it is important because stakeholders should be informed about the importance of their involvement in State Implementation Plans. Also, when intended for the general public, this discussion should be brief and in plain English.

Finally, to reach the general public audience, MANE-VU must be prepared to issue its message repeatedly. A single press release will not suffice. Ideally, outreach activities should occur weekly to maintain public interest.

#### **4.1 Value of Scenic Views**

Because the Regional Haze Rule is designed to improve visibility, MANE-VU needs to portray the value of scenic views. However, there are obstacles that MANE-VU must address when creating its message. First, MANE-VU needs to overcome the perception that low visibility is the norm. Also, audiences need to understand that pollution is the cause of low visibility. For example, poor visibility is not caused entirely by humidity and the Smokey Mountains are not “smoky.”

The gradual increase in haze has been a long process. The general public is not aware of what they have lost as a result of haze. Therefore visual demonstrations are key. MANE-VU should utilize pictures to make its point. Split screen pictures that demonstrate the view of a particular vista with and without haze is effective. However, MANE-VU should discriminate about the pictures selected to ensure that other factors are not contributing to the decreased visibility, such as humidity. For Web site outreach, haze cams are effective tools and should continued to be used.

The next question is which vistas should MANE-VU focus on. Class I areas may seem to be an obvious choice. While they should be included, Class I areas should not be the primary focus. Since improvement in haze will benefit vistas throughout the region, MANE-VU can utilize other vistas in the region that may garner more support because of their appeal to the general public. For example, vistas to concentrate on include:

- Smokey Mountains;
- Acadia National Park;
- White Mountains;
- Chesapeake Bay;
- Offshore views; and
- City Sky Lines:
  - New York City
  - Boston,
  - Hartford,
  - Baltimore, Md., Inner Harbor

## **4.2 Quality of Life/Health Issues**

While visibility is a concern, it is not believed that the general public will change behavior strictly for improved views, because people are not motivated by environmental issues alone. It is recommended that haze be linked to personal lifestyle issues such as health, traffic, decreased stress (which is related to recreation and vacation) and money (which is discussed below). Addressing personal issues linked to haze will garner more interest and support. Visibility is a collateral benefit in this approach.

Emphasizing that the particles that cause haze not only cause poor visibility but also cause health problems, especially for children, seniors and people with impaired immune systems, creates a more urgent message that people can understand. As noted earlier, it is important to have credible science. Thus, affiliating with American Lung Association on this issue would be recommended.

Connecting haze to electricity use is another avenue for MANE-VU. By reinforcing that poor visibility is in great part a result of pollution from utilities, MANE-VU can address other lifestyle issues. Conserving energy is a valued action that saves the homeowner money, which decreases air pollution that also improves visibility. The focus in this message is conserving energy and money, which the average homeowner can understand directly, but it also has collateral benefits in improving visibility.

## **4.3 Empowerment**

Just as MANE-VU's message should not scare or overwhelm its audiences, MANE-VU should include empowerment messages—little things people can do to make a difference. This message reiterates that haze is caused by pollution over which people have some control. It also reinforces that people have an impact on the environment around them.

MANE-VU should compose a list of small steps people can do to help, such as turning off their lights or inflating their tires. These should not be big lifestyle changes. Another example, power choice, provides a strong empowerment message that also allows MANE-VU to link haze to pollution caused by utilities. This joint message will prepare the general public for changes that will occur with utilities in the future as implementation of the rule unfolds.

When empowering and asking people to change their behavior, MANE-VU must educate the general public first. This education should be clear and supported with scientific fact. A nationally-known spokesperson may prove useful in this message type because properly selected spokesperson can lend credibility and garner reaction from audiences.

MANE-VU also must address the concern that the MANE-VU region is downwind from other polluters. This issue should be addressed because people will not be willing to change their behavior if they feel that no matter how hard they try, pollution will not improve because people upwind are not trying. This may require partnering with other RPOs on the empowerment message, while making sure that the MANE-VU audience is aware of the partnership and actions taking place in other RPOs.

#### **4.4 Economic Benefits**

As discussed previously in section 3.1, Tourism Industry, there are economic impacts from haze and impaired visibility. As a result, the costs of haze and the benefits of cleanup is an important message for MANE-VU to convey.

The economic impact is another quality of life issue that people can put their hands around. What is important to define is how the economy is impacted by poor visibility. This can result in decreased tourism and recreational visitors to an area. In addition, local marketing efforts can be lost if air quality is bad. MANE-VU can facilitate regional networking to address pollution problems that may economically affect many areas.

Overall, MANE-VU should research and provide the economic data to support claims that reduced visibility impacts economies. This may be achieved through partnerships with the tourism industry, Chambers of Commerce, and Class I areas.

## **5.0 Next Steps**

While MANE-VU should begin its outreach efforts as soon as possible, before expending resources, it should conduct targeted research and build bridges with partners. Once those tasks are completed, then MANE-VU can begin the creative process of designing outreach material. The steps for an outreach campaign are provided below.

### **5.1 Contact the States**

MANE-VU first should contact the States and regulatory agencies to determine exactly what they need. If the States need assistance with model language, it should be clearly defined what is needed. MANE-VU should determine whether or not the States and regulatory agencies are inclined to conduct outreach activities for their local publics. If so, MANE-VU needs to know what types of outreach materials are needed. Are they interested in boilerplate language and ideas that they can adapt to their own needs? Or are they interested in pre-made, professional-grade materials? Finally, MANE-VU should assess whether or not resources are available on the State level to conduct an outreach campaign.

### **5.2 Reach Out to Partners**

Consecutively, MANE-VU should research potential partners. Partners could include:

- Tourism Industry;
- Recreation Clubs;
- Class I Areas;
- Chambers of Commerce;
- Environmental Organizations;
- Industry and Other Regulated Communities;
- Mass Transit;
- Agricultural Extension Agencies; and
- Health Care Industry.

Before contacting the identified partners, MANE-VU should have a clear understanding of why they are desirable partners (i.e., the benefit to MANE-VU described in this report) and also what benefit the partner will gain from working with MANE-VU. Then MANE-VU should contact the potential partners to gauge interest. Once interest is clear, then MANE-VU must clearly define how the partnership will work—by sharing expenses, collaborating on outreach materials, exchanging mailing lists, or merely providing endorsement? These elements must be clear between both parties from the onset.

### **5.3 Identify Messages and Design Outreach Material**

After MANE-VU has conducted additional research and reached out to the States and partners, then it can begin crafting messages and designing the outreach material.

### ***5.3.1 Identify Messages***

When designing the outreach materials, MANE-VU needs to conduct additional research to ensure that the most appropriate messages are being crafted for each target audience. Based on the recommendations in this report, materials should be developed for:

- States/regulatory agencies (as discussed above);
- Elected Officials;
- Media;
- General public in the MANE-VU region:
  - schools;
  - health care community;
  - recreation community; and
  - homeowners;
- Industry; and
- Potential MANE-VU partners:
  - Tourism Industry;
  - Recreation Clubs;
  - Class I Areas;
  - Chambers of Commerce;
  - Environmental Organizations;
  - Industry and Other Regulated Communities;
  - Mass Transit;
  - Agricultural Extension Agencies; and
  - Health Care Industry.

Each audience is very different. A message that works for one will not necessarily work for another. The key messages have been identified as:

- Value of Scenic Views;
- Quality of Life/Health Issues;
- Empowerment; and
- Economic Benefits.

When reviewing the messages for an intended audience, it is important to understand what MANE-VU hopes to accomplish with each outreach activity. For example, if MANE-VU intends to change behavior of homeowners, it can combine the four messages—first, getting the homeowners’ attention with quality of life/health issues and quantitative information, and second, providing steps for change that are not overwhelming. After that is accomplished, MANE-VU can mention that visibility is another benefit of their changed behavior. When reaching out to school children, however, the approach may be more about education than changing behavior, in which case focusing on haze and visibility would be enough.

MANE-VU also should consider conducting cultural analyses to determine that the message will be received by the intended audience. A cultural aspect to consider is the

language spoken. Providing material in Spanish, for example, in a particular area may broaden the scope of engagement.

### ***5.3.2 Design Outreach Materials***

Hopefully, strong partnering relationships have already been established before this point. This should make creating outreach materials for partner constituents less complex because the partner agency should have experience reaching their own audience. Ideally, the partners can assist MANE-VU in crafting the right message. (This concept should be discussed in the expectations conversation held during partnership development.)

As part of the design process, MANE-VU needs to consider which media should be used. Research is needed here as well. For example, homeowners tend to get their information from television, radio, and newspapers. However, knowing the sources is not enough information to justify the expense of those media. For example, if MANE-VU plans to seriously consider television public service announcements, it is recommended that resources be invested in a market analysis, which will specifically target an audience—by age group, gender, and viewing time—with the best message. Other media to consider include:

- Brochures;
- Fact Sheets;
- Frequently Asked Question sheets;
- Newsletters;
- Education kits;
- Slide shows and presentations for speakers series;
- Web-based documents; and
- Flyers.

When selecting the media, MANE-VU should consider the benefits and drawbacks of each. Television may reach a large audience, but the message must be singular and brief. Plus, the expense of creating a commercial (even using the Ad Council) may limit other MANE-VU outreach activities. Printed material has the benefit of presenting a lot of information, but delivery methods are more complicated. Web-base documents are economical, but a major drawback is the digital divide—many Americans do not have access.

## **5.4 Create and Distribute Outreach Material**

Once the audience, intent, message, and media are clear, then MANE-VU can work with its partners to create the outreach material. Because much emphasis should be placed on visual information, the outreach material should be full color and high quality.

MANE-VU may not need to create its outreach material from scratch because much information already exists. To facilitate this process, section 6.0 presents a preliminary list of existing information available on the Internet that MANE-VU can adapt for its outreach material.

### **5.5 Conduct Assessment of Effectiveness of Outreach Material**

MANE-VU should periodically assess the effectiveness of its outreach campaign and the material. This entails collecting data on what has been done and what has worked in meeting its prescribed goals. MANE-VU should determine what indicators it will measure that can demonstrate progress (e.g., increased visibility range, decreased asthma attacks, increased understanding of haze).

It is recommended that after a year or two, MANE-VU should develop a formal focus group process to analyze its outreach approach to determine if changes need to be made or efforts refocused.

## 6.0 Existing Outreach Material

Much information already exists on regional haze. Rather than recreating material, MANE-VU intends to conserve its resources by adapting the most valuable existing information. Below is a preliminary analysis of information available on the Internet. After considering the recommendations in this report, MANE-VU should conduct its own analysis on the existing material to determine which material will work for the defined needs. In addition, MANE-VU should contact the original agency to gather what data they have on the material's success in raising awareness and of audience reaction to the information. Because of the need identified in section 4.0, Messages and Approaches, to have supportable scientific facts, the existing material recommended here should be properly assessed for its credibility. Special attention should be given to material created by groups with an agenda because data can be manipulated to reflect a specific view.

Based on the Internet research, three documents stand out as the most useful for MANE-VU:

- **clear the air.pdf**—"Out of Sight: Haze in our National Parks; How Power Plants Cost Billions in Visitor Enjoyment," by the Clean Air Task Force;
- **Out of Sight: The Science and Economics of Visibility Impairment;** and
- **Regional Haze and Visibility in the Northeast and Mid-Atlantic States.**

These documents provide extensive information and cover 10 of the 12 categories as noted in the matrix in Section 6.2 and index in Section 6.3 (The bold type indicates the title that is used in Sections 6.2 and 6.3 and is included here to facilitate your review).

Other documents that appear to be useful based on the variety of information they provide include:

- **intro\_to\_visibility.pdf**.— "Introduction to Visibility" by William C. Malm, Air Resources Division of the National Park Service;
- **visibility\_trends\_1999.pdf**— "Visibility Trends," National Air Quality and Emissions Trends Report;
- **haze.pdf**— "Haze" brochure from EPA's Office of Air Quality Planning and Standards
- **Getting the Dirt on Your Electric Company.url**— by the Natural Resources Defense Council; and
- **National Environmental Trust Issue** page.

The eight documents listed above provide the most information and would be the best starting point for MANE-VU when creating its own outreach material. However, there are 63 documents and Web sites provided in this assessment. Each provides its own valuable information which can supplement the above "top eight" documents.



## **6.1 Limitations of the Research**

When conducting the Web research, certain universal problems were encountered, There also were limitations to obtaining information. The problems and limitations were:

- Government restricted Web sites (i.e., documents that can only be accessed by users coming from a .gov work station);
- Password restricted documents;
- Out-of-date links to documents;
- Multiple sites linking to the same documents (many sites link to EPA information for content); and
- Unregistered sites (sites not registered with Search Engines, or out of date metadata).

## **6.2 Matrix of Documents and Web Pages on Haze**

The matrix on the next page contains all the related haze information gathered from research on the Internet. The documents and Web sites have been categorized to demonstrate the type of information they contain which may be useful to MANE-VU in its outreach activities. The categories were selected based on input from the Roundtable discussed in Section 1.0. This matrix also demonstrates the variety of information contained in each document or Web site, which was the rationale for selecting the “top eight” documents discussed in Section 6.0. The “top eight” documents are bolded in the matrix to facilitate your review.

	Big Vistas	Visual Information	Value of Scenic View Message	Quality of Life/ Health Issues	Regionality	Empowerment Message	Quantitative Message	Targeted Message	Technical Facts	Educational Materials	General Air Pollution	Case Studies
<b>Documents</b>												
Auto_Camera.pdf		X										
vis_mon_appro.pdf		X										
WRAP_workplan.pdf												X
ZirkleAttachments.pdf												X
AppA.doc												X
AppB.doc												X
AppC.doc												X
AppD.doc												X
AppE.doc												X
AppF.doc												X
BART_sumtable.doc												X
<b>clear the air.pdf</b>		X	X				X	X	X	X		
<b>intro_to_visability.pdf</b>		X			X				X	X		
mohave.pdf									X			X
exist_hist_conditions.pdf									X			
<b>visibility_trends_1999.pdf</b>	X	X						X	X			
<b>haze.pdf</b>		X	X			X		X				
nat_air_qual_find1999.pdf									X		X	
reghaze_natpark_vis_fact.pdf			X	X			X					
fine_part_con_comp_nvermont.pdf					X				X		X	
CleanCities_facts.pdf								X				
<b>Out of Sight: The Science and Economics of Visibility Impairment</b>	X	X	X	X		X				X		
<b>Regional Haze and Visibility in the Northeast and Mid-Atlantic States</b>			X	X	X			X		X		

	Big Vistas	Visual Information	Value of Scenic View Message	Quality of Life/ Health Issues	Regionality	Empowerment Message	Quantitative Message	Targeted Message	Technical Facts	Educational Materials	General Air Pollution	Case Studies
<b>Web Sites</b>												
Mathematical Model for Evaluating Data PowerPoint Presentation									X			X
Environmental Defense Factsheet											X	
Northeast Car Pollution Targeted												X
Air Trajectories Across Northeastern United States									X			X
American Lung Association				X								
ALA State of the Air 2001(VA, NH, MA)										X		X
Environmental Science: Regional Updates											X	X
Clean Cities Home								X				
P24U						X		X				
EPA's Visibility Improvement Program									X			
Regional Haze and Visibility Protection									X			
Air Quality									X		X	
Benchmarking Air Emissions of Electric Utility Generators								X	X		X	
Objectives of REVEAL II												X
Breath-Taking—Guide to Mortality				X								
<b>Getting the Dirt on Your Electric Companies</b>					<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>			
Haze Event—Haze Cam Pollution	X	X										
IMPROVE								X	X	X		
National Academy Press								X	X			
Regional haze means visitors can't take a long view of America's scenic areas	X		X					X				

Outreach Assessment for the Mid-Atlantic Northeast Region  
 January 30, 2002

	Big Vistas	Visual Information	Value of Scenic View Message	Quality of Life/ Health Issues	Regionality	Empowerment Message	Quantitative Message	Targeted Message	Technical Facts	Educational Materials	General Air Pollution	Case Studies
Representative Visibility for Forest Service Class I Areas								X	X			
United States—New Reason for Fighting Pollution								X				
Education										X		
Haze FAQ				X		X						
Sources of Visibility Impairment		X							X			
Urban and Regional Air Pollution											X	
National Park Service Visibility Program	Not Available											
Air Pollution Effects on Visitor Experience	Not Available											
Map of 156 Wilderness Areas Protected by Regional Haze Rule	X											
<b>National Environmental Trust Issue</b>	<b>X</b>	<b>X</b>					<b>X</b>			<b>X</b>		
MARAMA (MANE-VU Partner)								X				
NESCAUM (MANE-VU Partner)								X				
WRAP (RPO)								X				
CENRAP (RPO)								X				
VISTAS (RPO)								X				
Midwest RPO (RPO)								X				
SAMI (RPO)								X				
CAMNET	X	X										
The National Parks Service Live Cam Pictures	X	X										
NPS Visibility Impairment Photographs	X	X										
Washington Post Webcam	X	X										

### 6.3 Index of Documents and Web Pages on Haze

This section presents a description of the haze-related documents and Web sites that already exist. The information is grouped by major messages and audiences previously discussed in this document and presented in the matrix.

(Entries denoted by “.url” indicate Web sites. The Web address is not provided because they are contained in another document already provided to MANE-VU. In that document the Web address is embedded such that highlighting the entry will automatically open the Web site.)

#### 1. **Big Vistas of Concern:**

- a. Smokey Mountains
- b. Acadia National Park
- c. White Mountains
- d. Chesapeake Bay
- e. Offshore
- f. City Sky Lines:
  - i. New York City
  - ii. Boston
  - iii. Hartford, Conn.
  - iv. Baltimore Inner Harbor

**visibility\_trends\_1999.pdf**— “Visibility Trends,” National Air Quality and Emissions Trends Report, 1999, presents aerosol and light extinction data collected between 1990 and 1999 at 36 Class I areas. <discusses visibility in DC>

**Haze Event – Haze Cam Pollution Visibility Camera Network.url**— Shows live pictures of vistas in the Northeast.

**Regional haze means visitors can't take in the long view of America's scenic areas.url**—news article

**Clear.pdf**—Out of Sight: The Science and Economic of Visibility Impairment.

**Map of 156 Wilderness Areas protected by Regional Haze rule.**

**National Environmental Trust Issue page.**

**CAMNET.url**—network of realtime visibility cameras located at scenic urban and rural locations.

**The National Park Service Live Cam Pictures.url**

**NPS visibility impairment photographs.url**

**Washingtonpost.com**—links to webcams around Baltimore Washington area)

## 2. Visual Information to Demonstrate Haze Changes

**Sources of Visibility Impairment.url**—general information on haze

**Haze Event – Haze Cam Pollution Visibility Camera Network.url**—Shows live pictures of vistas in the Northeast.

**intro\_to\_visibility.pdf**— “Introduction to Visibility” by William C. Malm, Air Resources Division of the National Park Service.

**visibility\_trends\_1999.pdf**— “Visibility Trends,” National Air Quality and Emissions Trends Report, 1999, presents aerosol and light extinction data collected between 1990 and 1999 at 36 Class I areas.

**clean the air.pdf**— “A Clean the Air Report: Out of Sight: Haze in our National Parks; How Power Plants Cost Billions in Visitor Enjoyment” by Clean Air Task Force

**haze.pdf**— “Haze” brochure from EPA’s Office of Air Quality Planning and Standards

**auto\_camera.pdf**— by Air Resource Specialists Inc. A Technical Note on Automatic Camera Visibility Monitoring System.

**vis\_mon\_appro.pdf**— by Air Resource Specialists Inc. Provides technical information on visibility.

**Clear.pdf**—Out of Sight: The Science and Economic of Visibility Impairment.

**National Environmental Trust Issue page.**

**CAMNET.url**—network of realtime visibility cameras located at scenic urban and rural locations.

**The National Park Service Live Cam Pictures.url**

**NPS visibility impairment photographs.url**

**Washingtonpost.com**—links to webcams around Baltimore Washington area)

### **3. Messages About the Value of Scenic Views**

**clean the air.pdf**— “A Clean the Air Report: Out of Sight: Haze in our National Parks; How Power Plants Cost Billions in Visitor Enjoyment” by Clean Air Task Force

**haze.pdf**— “Haze” brochure from EPA’s Office of Air Quality Planning and Standards

**reghaze\_natpark\_vis\_fact.pdf**—EPA’s fact sheet on the Regional Haze Rule

**Regional haze means visitors can't take in the long view of America's scenic areas.url**—news article

**Clear.pdf**—Out of Sight: The Science and Economic of Visibility Impairment.

**013101-NESCAUM-Final\_Report.pdf**—Regional Haze and Visibility in the Northeast and Mid-Atlantic States.

### **4. Messages About Quality of Life/Health Issues**

**Haze FAQ.url**—frequently asked questions about haze (from Asia)

**reghaze\_natpark\_vis\_fact.pdf**—EPA’s fact sheet on the Regional Haze Rule

**Breath-taking – Guide to Mortality and Pollution Tables.url**-- Natural Resources Defense Council, discusses deaths from cardiopulmonary causes may be attributable to particulate air pollution each year.

**www.lungusa.org**—American Lung Association Web site.

**Clear.pdf**—Out of Sight: The Science and Economic of Visibility Impairment.

**013101-NESCAUM-Final\_Report.pdf**—Regional Haze and Visibility in the Northeast and Mid-Atlantic States.

### **5. Regionality of the Problem**

**fine\_part\_con\_comp\_nvermont.pdf**— “Sources of Fine Particle Concentration and Composition in Northern Vermont,” This study applies and compares results of four receptor modeling techniques to a common set of IMPROVE-like, speciated fine particle measurement data collected at remote site in northwestern Vermont between 1988 and 1995.

**intro\_to\_visibility.pdf**— “Introduction to Visibility” by William C. Malm, Air Resources Division of the National Park Service.

**Getting the Dirt on Your Electric Company.url**— Natural Resources Defense Council, contains detailed environmental profiles of the 50 largest electric utility generating companies in 37 states in the eastern half of the United States. The profiles are intended to provide emissions performance information to consumers and policymakers whose decisions will shape the future of the electric industry.

**013101-NESCAUM-Final\_Report.pdf**—Regional Haze and Visibility in the Northeast and Mid-Atlantic States.

## **6. Empowerment Messages—Little Things People Can Do to Make a Difference**

**haze.pdf**— “Haze” brochure from EPA’s Office of Air Quality Planning and Standards

**Getting the Dirt on Your Electric Company.url**— Natural Resources Defense Council, contains detailed environmental profiles of the 50 largest electric utility generating companies in 37 states in the eastern half of the United States. The profiles are intended to provide emissions performance information to consumers and policymakers whose decisions will shape the future of the electric industry.

**Haze FAQ.url**—frequently asked questions about haze (from Asia)

**P24U.url**— provides simple pollution prevention techniques for the individual.

**Clear.pdf**—Out of Sight: The Science and Economic of Visibility Impairment.

## **7. Quantitative Message—Costs of Haze and Benefits of Cleanup**

**clean the air.pdf**— “A Clean the Air Report: Out of Sight: Haze in our National Parks; How Power Plants Cost Billions in Visitor Enjoyment” by Clean Air Task Force

**reghaze\_natpark\_vis\_fact.pdf**—EPA’s fact sheet on the Regional Haze Rule

**National Environmental Trust Issue page.**

## **8. Messages Directed to Specific Audiences:**

- a. States/regulatory agencies/elected officials**



**clean the air.pdf**— “A Clean the Air Report: Out of Sight: Haze in our National Parks; How Power Plants Cost Billions in Visitor Enjoyment” by Clean Air Task Force

**Getting the Dirt on Your Electric Company.url**— Natural Resources Defense Council, contains detailed environmental profiles of the 50 largest electric utility generating companies in 37 states in the eastern half of the United States. The profiles are intended to provide emissions performance information to consumers and policymakers whose decisions will shape the future of the electric industry.

**b. General public in the MANE-VU region**

**United States - New Reason for Fighting Pollution (Hint: It's on the Horizon).url**—article from The Christian Science Monitor.

**Improve.url**— provides access to the IMPROVE monitoring data resources and educational material on the science of visibility and regulations.

**clean the air.pdf**— “A Clean the Air Report: Out of Sight: Haze in our National Parks; How Power Plants Cost Billions in Visitor Enjoyment” by Clean Air Task Force

**haze.pdf**— “Haze” brochure from EPA’s Office of Air Quality Planning and Standards

**Getting the Dirt on Your Electric Company.url**— Natural Resources Defense Council, contains detailed environmental profiles of the 50 largest electric utility generating companies in 37 states in the eastern half of the United States. The profiles are intended to provide emissions performance information to consumers and policymakers whose decisions will shape the future of the electric industry.

**Regional haze means visitors can't take in the long view of America's scenic areas.url**—news article

**P24U.url**— provides simple pollution prevention techniques for the individual.

**013101-NESCAUM-Final\_Report.pdf**—Regional Haze and Visibility in the Northeast and Mid-Atlantic States.

**c. People/groups who can help spread MANE-VU’s message:**  
**i. Tourism agencies**

**clean the air.pdf**— “A Clean the Air Report: Out of Sight: Haze in our National Parks; How Power Plants Cost Billions in Visitor Enjoyment” by Clean Air Task Force

**ii. Recreation clubs**

**clean the air.pdf**— “A Clean the Air Report: Out of Sight: Haze in our National Parks; How Power Plants Cost Billions in Visitor Enjoyment” by Clean Air Task Force

**iii. Class I areas**

**clean the air.pdf**— “A Clean the Air Report: Out of Sight: Haze in our National Parks; How Power Plants Cost Billions in Visitor Enjoyment” by Clean Air Task Force

**visibility\_trends\_1999.pdf**— “Visibility Trends,” National Air Quality and Emissions Trends Report, 1999, presents aerosol and light extinction data collected between 1990 and 1999 at 36 Class I areas.

**Representative Visibility for Forest Service Class I Areas.url**— discusses the range of visibility conditions at each U.S. Forest Service Class I Wilderness.

**Nat'l Academy Press, Protecting Visibility in National Parks and Wilderness Areas.url**—examines patterns of visibility degradation and haze-forming pollutant concentrations.

**013101-NESCAUM-Final\_Report.pdf**—Regional Haze and Visibility in the Northeast and Mid-Atlantic States.

**iv. Chambers of Commerce**

**v. Environmental Organizations**

**clean the air.pdf**— “A Clean the Air Report: Out of Sight: Haze in our National Parks; How Power Plants Cost Billions in Visitor Enjoyment” by Clean Air Task Force

**P24U.url**— provides simple pollution prevention techniques for the individual (Pacific Northwest Pollution Prevention Resource Center).

**013101-NESCAUM-Final\_Report.pdf**—Regional Haze and Visibility in the Northeast and Mid-Atlantic States.

**MARAMA visibility page**

**NESCAUM visibility page**

**WRAP**—Western Regional Air Partnership (RPO for Western States - mostly organization info, good links and resources to most of available info on haze)

**CENRAP**—Central Regional Air Planning Association (RPO for Central States)

**VISTAS**—The Visibility Improvement State and Tribal Association of the Southeast

**Midwest RPO**

**SAMI**—Southern Appalachian Mountains Initiative

**vi. Utilities**

**Benchmarking Air Emissions of Electric Utility Generators.url**—Natural Resources Defense Council, discuss pollution from Electric utilities and visibility.

**Getting the Dirt on Your Electric Company.url**— Natural Resources Defense Council, contains detailed environmental profiles of the 50 largest electric utility generating companies in 37 states in the eastern half of the United States. The profiles are intended to provide emissions performance information to consumers and policymakers whose decisions will shape the future of the electric industry.

**vii. Mass Transit**

**CleanCities\_facts.pdf**—discusses DOE's initiative to reduce air pollution

**Clean Cities Home.url**—U.S. Department of Energy's Clean Cities Program supports public-private partnerships that deploy alternative fuel vehicles and build supporting alternative fuel infrastructure.

**viii. Agricultural Extension Agencies**

**9. Technical Documents with Scientific Facts**

**EPA's Visibility Improvement Program.url**—EPA's Web site about haze.

**Regional Haze and Visibility Protection.url**—EPA's Office of Air's Page on Haze.

**Sources of Visibility Impairment.url**—general information on haze

**Representative Visibility for Forest Service Class I Areas.url**— discusses the range of visibility conditions at each U.S. Forest Service Class I Wilderness.

**Nat'l Academy Press, Protecting Visibility in National Parks and Wilderness Areas.url**—examines patterns of visibility degradation and haze-forming pollutant concentrations.

**Improve.url**— provides access to the IMPROVE monitoring data resources and educational material on the science of visibility and regulations.

**Getting the Dirt on Your Electric Company.url**— Natural Resources Defense Council, contains detailed environmental profiles of the 50 largest electric utility generating companies in 37 states in the eastern half of the United States. The profiles are intended to provide emissions performance information to consumers and policymakers whose decisions will shape the future of the electric industry.

**Benchmarking Air Emissions of Electric Utility Generators.url**— Natural Resources Defense Council, discuss pollution from Electric utilities and visibility.

**Air Quality.url**— State of the Nation's Ecosystems, presents study on visibility.

**fine\_part\_con\_comp\_nvermont.pdf**— "Sources of Fine Particle Concentration and Composition in Northern Vermont," This study applies and compares results of four receptor modeling techniques to a common set of IMPROVE-like, speciated fine particle measurement data collected at remote site in northwestern Vermont between 1988 and 1995.

**nat\_air\_qual\_find1999.pdf**— "Latest Findings on National Air Quality: 1999 Status and Trends," EPA, has a section on visibility.

**intro\_to\_visibility.pdf**— "Introduction to Visibility" by William C. Malm, Air Resources Division of the National Park Service.

**visibility\_trends\_1999.pdf**— "Visibility Trends," National Air Quality and Emissions Trends Report, 1999, presents aerosol and light extinction data collected between 1990 and 1999 at 36 Class I areas.

**exist\_hist\_conditions.pdf**— “Visibility: Existing and Historical Conditions—Causes and Effects,” Acidic Deposition: State of Science and Technology Report 24, discusses acid precipitation’s affect on visibility.

**clean the air.pdf**— “A Clean the Air Report: Out of Sight: Haze in our National Parks; How Power Plants Cost Billions in Visitor Enjoyment” by Clean Air Task Force.

**mohave.pdf**— “Project Mohave Final Report,” communicates the consensus data interpretation of the principal partners in Project Measurement of Haze and Visual Effects (MOHAVE) concerning the nature, extent, and frequency of the contributions of the Mohave Power Project (MPP) and other sources to haze at the Grand Canyon National Park (GCNP).

**Microsoft Powerpoint Presentation.url**— paper about a mathematical model to speciated aerosol data and applying ensemble trajectory techniques to evaluate sources in the Northeast.

**(Air Trajectories across the Northeastern United States).url**—presents backward trajectories estimate air transport pathways for sites in the northeastern United States.

## 10. Educational Materials to Engage and Empower

**Education.url**— Educational Material on Visibility Science and Regulations from IMPROVE.

**Improve.url**— provides access to the IMPROVE monitoring data resources and educational material on the science of visibility and regulations.

**intro\_to\_visibility.pdf**— “Introduction to Visibility” by William C. Malm, Air Resources Division of the National Park Service.

**clean the air.pdf**— “A Clean the Air Report: Out of Sight: Haze in our National Parks; How Power Plants Cost Billions in Visitor Enjoyment” by Clean Air Task Force

**ALA-State of the Air – Virginia.url; New Hampshire.url; Massachusetts.url**— provides easy-to-understand air pollution summaries across the United States.

**Clear.pdf**—Out of Sight: The Science and Economic of Visibility Impairment.

**013101-NESCAUM-Final\_Report.pdf**—Regional Haze and Visibility in the Northeast and Mid-Atlantic States.

**National Environmental Trust Issue page.**

## **11. Air Pollution in General and the Scientific Links to Haze**

**Environmental Defense: Fact Sheet – Air Pollution from Large Diesel Trucks.url**— provides discussion of pollution from trucks, including haze.

**Urban and Regional Air Pollution.url**—general information on haze (Australia).

**Benchmarking Air Emissions of Electric Utility Generators.url**— Natural Resources Defense Council, discuss pollution from Electric utilities and visibility.

**Air Quality.url**— State of the Nation’s Ecosystems, presents study on visibility

**fine\_part\_con\_comp\_nvermont.pdf**— “Sources of Fine Particle Concentration and Composition in Northern Vermont,” This study applies and compares results of four receptor modeling techniques to a common set of IMPROVE-like, speciated fine particle measurement data collected at remote site in northwestern Vermont between 1988 and 1995.

**nat\_air\_qual\_find1999.pdf**— “Latest Findings on National Air Quality: 1999 Status and Trends,” EPA, has a section on visibility.

**Environmental Science: Regional Updates.url**— paper discussing the high degree of industrialization and urbanization in the Northeast and how the region is victim to a variety of air pollution problems.

## **12. Case Histories of Other Work Done, Specifically from the Western RPOs**

**Bart\_sumtable.doc**— A compilation of approaches which have been taken in certifying visibility impairment in Class 1 areas which may be Reasonably Attributable (RA) to a source or small group of sources and applying Best Available Retrofit Technology (BART) to remedy the impairment. Includes the following case studies:

- **AppA.doc**— Healy Clean Coal Project, Healy, Alaska
- **AppB.doc**— Mohave Generating Station, Laughlin, Nevada
- **AppC.doc**— Navajo Generating Station, Page, Arizona
- **AppD.doc**— Georgia-Pacific Kraft Pulp and Paper Mill, Woodland, Maine
- **AppE.doc**— Centralia Power Plant, Centralia, Washington
- **AppF.doc**— Mt. Zirkel Wilderness Area in Northwest Colorado

**WRAP\_Workplan.pdf**— WRAP Work Plan for Regional Haze. This work plan describes the Western Regional Air Partnership (WRAP) activities currently in progress or planned to meet the requirements of the Regional Haze Rule.

**ZirkleAttachments.pdf**— Determining Existing Visibility Impairment in the Mt. Zirkel Wilderness Area

**mohave.pdf**— “Project Mohave Final Report,” communicates the consensus data interpretation of the principal partners in Project Measurement of Haze and Visual Effects (MOHAVE) concerning the nature, extent, and frequency of the contributions of the Mohave Power Project (MPP) and other sources to haze at the Grand Canyon National Park (GCNP).

**Objectives of Reveal II.url**— REVEAL (Regional Visibility Experimental Assessment in the Lower Fraser Valley) field campaign was undertaken to characterize summertime visibility and ambient aerosol loadings in southwestern British Columbia (B.C.).

**Microsoft Powerpoint Presentation.url**— paper about a mathematical model to speciated aerosol data and applying ensemble trajectory techniques to evaluate sources in the Northeast.

**Northeast Car Pollution Targeted.url**— Six environmental groups have challenged New York, New Jersey, and Connecticut transportation agencies, charging that transportation plans recently adopted for the tri-state metropolitan area may violate new 1990 Clean Air Act mandates to reduce automobile pollution in severely polluted areas.

**(Air Trajectories across the Northeastern United States).url**—presents backward trajectories estimate air transport pathways for sites in the northeastern United States.

**ALA-State of the Air – Virginia.url; New Hampshire.url; Massachusetts.url**— provides easy-to-understand air pollution summaries across the United States.

**Environmental Science: Regional Updates.url**— paper discussing the high degree of industrialization and urbanization in the Northeast and how the region is victim to a variety of air pollution problems.