Testimony of William Yeatman Assistant Director, Center for Energy and Environment Competitive Enterprise Institute on "Mandate Madness: When Sue and Settle Just Isn't Enough" before the Subcommittee on Technology, Information Policy, Intergovernmental Relations and Procurement Reform Committee on Oversight and Government Reform U.S. House of Representatives

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Chairman Lankford, Ranking Member Connolly, Members of the Subcommittee, thank you for inviting me to testify before you today about the Environmental Protection Agency's Regional Haze program. I am William Yeatman, assistant director of the Center for Energy and Environment at the Competitive Enterprise Institute. We are a non-profit public policy organization dedicated to advancing the principles of limited government, free enterprise, and individual liberty. CEI specializes in regulatory policy. We accept no government funding and rely entirely on individuals, corporations, and charitable foundations for our financial support.

My testimony addresses whether the Environmental Protection Agency is infringing on the States' rightful authority on visibility improvement policy pursuant to the Clean Air Act. So-called "sue and settle" consent decrees—among other regulatory maneuvers described below—have figured prominently in Regional Haze Federal implementation plans imposed by EPA on Oklahoma, New Mexico, and North Dakota, over the staunch objections of State leaders. EPA's imposed Regional Haze plans would cost almost \$400 million per year more than the State plans.<sup>1</sup>

In addition to the aforementioned Regional Haze plans imposed on Oklahoma, New Mexico, and North Dakota, EPA has proposed Federal implementation plans for visibility improvement on Nebraska and Wyoming, at an estimated cost above the States' plans of \$24 million per year<sup>2</sup> and \$96 million per year,<sup>3</sup> respectively. Moreover, the Agency is poised to propose a Regional Haze Federal implementation plan for the Navajo Generating Station in the Navajo Nation, which, according to a Federal study, could raise water rates in Southern Arizona by 15 percent.<sup>4</sup> Regional Haze State implementation plans submitted by Arkansas and Utah were rejected by EPA. Finally, in Minnesota, EPA has signaled its intention to impose the same Regional Haze requirement twice, at the same time, in order to address the same visibility impairment. This regulatory "double dip"—a seemingly flagrant violation of President Barack Obama's Executive Order 13563 asking Federal agencies to eliminate duplicative regulation—would cost ratepayers almost \$30 million annually.<sup>5</sup>

The costs of EPA's imposed Regional Haze plans are significant; the benefits, however, are suspect. According to peer-reviewed research, the visibility improvement achieved by EPA's Regional Haze plans is imperceptible to the average person.

## **Regional Haze: The Basics**

In 1977 and 1990, Congress passed amendments to the Clean Air Act providing that States work together to improve visibility at Federal National Parks and Wilderness Areas. Together, these amendments are known as the Regional Haze provision.

A defining characteristic of the Regional Haze program is that States—and not EPA—are the lead decision-makers. In floor debate in 1977, the Congress unequivocally indicated that States should have the authority to decide how much value to assign to an aesthetic benefit<sup>6</sup>, and the resulting language of the Clean Air Act reflects this fact.<sup>7</sup>. According to EPA's 2005 Regional Haze implementation guidelines, "[T]he [Clean Air] Act and legislative history indicate that Congress evinced a special concern with insuring that States would be the decision-makers"<sup>8</sup> on visibility-improvement policy making. The courts, too, have interpreted the Clean Air Act such that states have primacy on Regional Haze decision making. In the seminal case *American Corn Growers v. EPA* (2001), which set boundaries between the States and EPA on Regional Haze policy, the D.C. Circuit Court remanded EPA's 1999 Regional Haze implementation guidelines for encroaching on States' authority.

The important points about Regional Haze are: (1) it is an aesthetic regulation, and not a public health regulation; and (2) the program accords States a unique degree of authority.

## How EPA Trumped State Authority on Regional Haze

In New Mexico, Oklahoma, and North Dakota, EPA and State officials disagreed over which controls were required at a number of coal-fired power plants for compliance with the Regional Haze provision of the Clean Air Act. However, the legal and regulatory record is clear: States get to make visibility policy. In order to trump State primacy on Regional Haze, EPA has relied on a mixed bag of regulatory maneuvers, which are explained in the subsections below.

1. Procedural Second Guessing

Before EPA can impose a Federal implementation plan, it must first disapprove the Regional Haze State implementation plan submitted by the States. Due to the primacy accorded States on visibility improvement policy by the Clean Air Act, EPA could not simply reject the emissions controls selected by the States. Instead, EPA only has the authority to object to process used by State's in the course of selecting controls for compliance with Regional Haze.

For example, in the course of reviewing Regional Haze implementation plans submitted by New Mexico,<sup>9</sup> Oklahoma,<sup>10</sup> and North Dakota,<sup>11</sup> EPA hired an independent contractor to vet the States' cost-effective analysis. In Nebraska, EPA audited the State's analysis using this same

contractor's previous Regional Haze work in Oklahoma.<sup>12</sup> In fact, this independent contractor is a paid consultant who routinely serves as a witness for the very same environmental groups who sued to obtain the Regional Haze consent decrees.<sup>13</sup> Unsurprisingly, the cost-estimates of controls at coal fired power plants calculated by this independent contractor/paid environmental consultant were hundreds of millions of dollars lower than those performed by New Mexico, Oklahoma, North Dakota, and (by extension) Nebraska. EPA then predicated its disapproval of these States' Regional Haze strategies based largely on these analyses.

EPA also issued questionable objections to Regional Haze visibility modeling used by the States. For example, North Dakota accounted for the significant interstate emissions originating in neighboring Canada that impact visibility in the States. However, EPA determined that such a real world approach was "inappropriate."<sup>14</sup> In New Mexico, EPA relies on a metric for cumulative visibility improvement, as if a two National Parks, hundreds of miles apart, could be viewed at the same time.<sup>15</sup>

2. Sue and Settle

As is explained above, EPA could not object to the final Regional Haze determinations rendered by the States, due to the unique primacy accorded States *vis-à-vis* EPA on visibility improvement policy. Instead of directly taking on the emissions controls selected by States in order to comply with Regional Haze, EPA disapproved the process by which the States rendered those determinations.

However, even if EPA does have the authority to object to the state's cost-effectiveness analyses and visibility modeling (the courts will decide), it is doubtful whether EPA could impose a preferred alternative, due to the State's prerogatives under the statute.

Enter "sue and settle." Beginning in 2009, a group of nonprofit environmental advocacy organizations—Sierra Club, WildEarth Guardians, Environmental Defense Fund, National Parks Conservation Association, Montana Environmental Information Center, Grand Canyon Trust, San Juan Citizens Alliance, Our Children's Earth Foundation, Plains Justice, and Powder River Basin Resource Council—filed lawsuits against EPA alleging that the agency had failed to perform its non-discretionary duty to act on State submissions for regional haze. Rather than litigate these cases, EPA simply chose to settle. In five consent decrees negotiated with environmental groups<sup>16</sup>—and, importantly, without notice to the States that would be affected<sup>17</sup>—EPA agreed to commit itself to various deadlines to act on all States' visibility improvement plans.

Like a one-two, left-right boxing combination, EPA first objects to the process used by the States to comply with Regional Haze, and then the Agency claimed it has no choice but to impose its preferred controls in order to comply with the consent decree.<sup>18</sup> Thus, EPA has trumped the States rightful authority on Regional Haze.

In New Mexico, EPA went even further. After years of deliberations, State regulators in New Mexico formulated a Regional Haze State implementation plan that met all Federal and State laws and requirements. Simply put, there were no grounds for objection.<sup>19</sup> EPA, however, refused to even consider the State's plan. According to EPA, it had no choice but to ignore the New Mexico's submission—despite State primacy on Regional Haze—because the Agency had to comply with a consent decree that had been filed in an Oakland court.<sup>20</sup>

3. Hybridization of Provisions of the Clean Air Act

In the course of imposing Regional Haze Federal implementation plans on New Mexico, Oklahoma, and North Dakota, EPA claimed an additional, independent source of authority to improve visibility under the Clean Air Act. In addition to the Regional Haze provision, the EPA also claims to have authority under the Good Neighbor provision of the Clean Air Act, <sup>21</sup> which provides that States demonstrate they have implemented adequate measures to ensure that their emissions do not "interfere with measures required to be included in the applicable implementation plan for any other state…to protect visibility."

In 1997, EPA tightened national ambient air standards for two criteria pollutants—particulate matter and ozone. Accordingly, the Good Neighbor provision requires that States must ensure that their emissions of these two pollutants do not interfere with compliance in downwind States of the 1997 revisions. Now, however, EPA claims that the 1997 revisions to health-based standards for particulate matter and ozone requires the Agency to ensure that emissions of other regulated pollutants from upwind States do not interfere with downwind States, in addition to particulate matter and ozone. Specifically, the Agency alleges that the Regional Haze plans submitted by New Mexico, North Dakota, and Oklahoma are insufficient to ensure that these States do not adversely affect visibility protection in downwind States.

This is a dubious legal reasoning, because the Regional Haze provision explicitly mandates that states control emissions of haze-causing pollutants that significantly diminish visibility in all Federal National Parks and Wilderness Areas, not just ones within their own borders. That is, the Regional Haze provision effectively requires States to meet the Good Neighbor provision. It makes no sense for Congress to create a program requiring States to work together to reduce visibility impairment in the Regional Haze provision, and then to also create a vague, amorphous, ill-defined separate source of authority with one phrase in the Good Neighbor provision, an altogether different section of the law.

More importantly, at the time that EPA imposed Federal implementation plans on New Mexico, Oklahoma, and North Dakota, the Agency had yet to fully approve a single Regional Haze plan. How could the Agency know whether one state is adversely affecting other States' visibility improvement programs that do not yet exist? Indeed, this is the exact reasoning used by EPA in 2006, when it published implementation rules for the Good Neighbor provision. In those rules, EPA said that, "is not possible at this time to assess whether there is any interference with measures in...another State designed to 'protect visibility'...until regional haze [plans] are submitted and approved."<sup>22</sup>

4. Regulatory "Double Dip"

There is a common misperception that Regional Haze is a Western problem. This is because EPA has proposed to allow States to meet the preponderance of their Regional Haze commitments by participating in the Cross State Air Pollution Rule (CSAPR),<sup>23</sup> which is confined largely to Eastern States. Thus, EPA proposed to approve 20 Regional Haze plans in January and February 2012.<sup>24</sup>

CSAPR states are not, however, in the clear; in fact, they may be worse off than non-CSAPR States. They face a "double dip" of redundant 1999 and 1980 Regional Haze regulations, being implemented by EPA as "phase one" and "phase two" of a larger Regional Haze plan. This power grab is a result of the phased approach EPA has used in implementing the Regional Haze program. EPA first issued Regional Haze regulations in 1980.<sup>25</sup> At that time, computing was nascent and complex atmospheric modeling was non-existent. As a result, EPA largely deferred requiring States to act, because attributing visibility impairment to a specific source was impossible. Nineteen years later, in 1999, atmospheric modeling had advanced to the point whereby EPA could support a regulations.<sup>26</sup> For whatever reason, EPA never repealed the 1980 regulation (known as "Reasonably Attributable Visibility Impairment" or "RAVI") despite the fact that its most significant requirements were virtually identical to the 1999 Regional Haze Program. As such, both regulations remain on the books, even though they are essentially duplicates.<sup>27</sup>

Now, EPA is claiming the authority to impose both of these copycat Regional Haze regulations, one on the heels of the other. On January 25, 2012, EPA proposed to approve Minnesota's preferred Regional Haze controls for the 2,025-megawatt Sherburne County Generating Plant ("Sherco Plant") operated by Xcel Energy. EPA predicated its proposed approval based on the state's participation in the CSAPR.<sup>28</sup>

However, in the same notice, EPA warned that it would soon be issuing further Regional Haze requirements for the Sherco Plant, pursuant to the 1980 "RAVI" regulations.<sup>29</sup> In discussions with the Minnesota Pollution Control Agency, EPA has indicated that it will press for \$250 million in "double dip" controls, specifically SCR technology.<sup>30</sup> As is demonstrated in the Minnesota Case Study later in this paper, EPA's preferred "RAVI" controls would achieve an imperceptible benefit in visibility improvement. The Minnesota example makes clear that there is no refuge from EPA's visibility regulations.

## **Dubious Benefits**

By employing the regulatory machinations above, EPA has usurped the State's rightful authority on Regional Haze, and imposed hundreds of millions of dollars of emissions controls on New Mexico, Oklahoma, and North Dakota. And for what? The visibility improvements achieved by EPA's imposed controls are invisible to the average eye.

EPA uses a metric known as a "deciview" to measure the amount of haze as it relates to the amount of light that is scattered and absorbed. A deciview value of 0 represents the clearest possible visibility, *i.e.*, the view is unaffected by haze. As the deciview number increases, visibility becomes progressively poorer.

In New Mexico, Oklahoma, and North Dakota, EPA's controls would improve visibility over the state plans by 1.12 deciviews,<sup>31</sup> 2.89 deciviews,<sup>32</sup> and .061 deciviews<sup>33</sup> (respectively). According to peer-reviewed research, however, a 2-4 deciview change gives a 67 percent maximum probability of detecting the improvement.<sup>34</sup> As a result, EPA's Regional Haze program is imposing significant costs on utilities in several States—costs that will ultimately be borne by ratepayers—in order to achieve visibility improvements that are imperceptible to most people.

<sup>&</sup>lt;sup>1</sup> For Oklahoma, annual costs taken from Oklahoma Department of Environmental Quality Air Quality Division BART Application Analysis for the Muskogee Generating Station (Table 10: Economic Cost for Units 4 and 5 – Dry FDG – Spray Dryer Absorber, p 17); the Sooner Generating Station (Table 10: Economic Cost for Units 4 and 5 – Dry FDG – Spray Dryer Absorber, p 17); and the Northeastern Power Plant (Table 11: Economic Cost for Units 4 and 5 – Dry FDG – Spray Dryer Absorber, p 14). These were three separate BART analyses that were completed in January 2010.

For New Mexico, annual costs taken from New Mexico Environment Department Air Quality Bureau BART Determination for San Juan Generating Station, Units 1-4, 28 February 2011, Table 10, "Impact Analysis and Cost-Effectiveness of Additional NOx Control Technologies,"

For North Dakota, annual costs taken from 76 FR 58603 and 76 FR 586266

<sup>&</sup>lt;sup>2</sup> For Nebraska, Annual cost achieved by multiplying emissions reductions at Gerald Gentleman Station required to meet EPA's "presumptive limits" for BART (39,185 tons per year of sulfur dioxide; see 77 FR 12780) time EPA's estimated 2012 price for a ton of sulfur dioxide on the emissions market established by the Cross State Air Pollution Rule (\$600).

<sup>&</sup>lt;sup>3</sup> For Wyoming, Annual cost data compiled from 77 FR 33022: Table 9—Summary of Jim Bridger Units 3 and 4 NOx BART Analysis—Costs per Boiler; Tables 28-30, Summaries of Basin Electric Laramie River Units 1-3 NOx BART Analysis; Table 31—Summary of Dave Johnston Unit 3 NOx BART Analysis; Table 32—Summary of Jim Bridger Units 1 and 2 NOx BART Analysis—Costs per Boiler; Table 33—Summary of Wyodak Unit 1 NOx BART Analysis

<sup>&</sup>lt;sup>4</sup> Hurlbut et al., Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts, National Renewable Energy Laboratory technical report, January 2012

<sup>5</sup> Annual costs for Minnesota based on Minnesota Pollution Control Agency BART Determination for Xcel Energy's Sherburne County Generating Plant, October 2009

<sup>6</sup> The House and Senate versions of the 1977 Amendments to the Clean Air Act differed on the balance of federalism for the Regional Haze provision. In Conference, Members of Congress came to agreement whereby States would have a distinctly high degree of primacy vis a vis EPA. Consider this floor exchange between Sens. James A. McLure (Idaho) and Edmund Muskie (Maine):

Mr. McLure: "Under the conference agreement, does the State retain the sole authority for identification of sources for the purpose of visibility issues under this section?"

Mr. Muskie: "Yes; the State, not [EPA] Administrator, identifies a source that may impair visibility and thereby falls within the requirement of [Regional Haze]."

Mr. McLure: "And does this also hold true for determination of "Best Available Retrofit Technology" [a primary control required by the Regional Haze program]?"

Mr. Muskie: "Yes. Here again it is the State which determines what constitutes "Best Available Retrofit Technology"..."

See Congressional Record-1977-0804-26854

<sup>7</sup> See 42 U.S.C. § 7491(b)(2)(A), which stipulates that States determine both which sources are subject to Best Available Retrofit Technology and what constitutes BART; *see also id.* at § 7491(A)(g)(2), which states that BART determinations can be made only after consideration of costs.

<sup>8</sup> 70 FR 39137

<sup>9</sup> *See* "Revised BART Cost-Effectiveness Analysis for Selective Catalytic Reduction at the Public Service Company of New Mexico San Juan Generating Station," Final Report, prepared by Dr. Phyllis Fox, Ph.D. (November 2010). <sup>10</sup> 76 Fed. Reg. 16183, at n.24.

<sup>11</sup> 76 Fed. Reg. 58599, at n.22.

<sup>12</sup> See Appendix A, "EPA's evaluation of cost of Flue Gas Desulfurization (FGD) controls Nebraska Public Power District (NPPD) Gerald Gentlemen Station (GGS), Units 1,2," to EPA Region 7 Technical Support Document, *available at* www.regulations.gov, Document ID No. EPA-R07-OAR-2012-0158-002.

<sup>13</sup> See "Dr. Fox Resume," 25 February 2011, available at <u>www.regulations.gov</u>, Document ID No. EPA-R06-OAR-2010-0190-0070.

<sup>14</sup> 76 FR 58603

<sup>15</sup> 76 FR 52395

<sup>16</sup> The five consent decrees:

- *National Parks Conservation Ass'n, et al. v. Jackson*, Civil Action No. 1: 11-cv-01548 (D.D.C. Dec. 2, 2011);
- Sierra Club v. Jackson, No. 1-10-cv-02112-JEB (D.D.C. Aug. 18, 2011);
- WildEarth Guardians v. Jackson, No. 4:09-CV-02453 (N.D. Cal. Feb. 23, 2010);
- WildEarth Guardians v. Jackson, No. 1:11-cv-00743-CMA-MEH (D. Col. June 16. 2011); and
- WildEarth Guardians v. Jackson, No. 1:10-cv-01218-REB-BNB (D. Col. Oct. 28, 2010).

<sup>17</sup> See, e.g., Comments submitted by Sue Kidd, Director, Environmental Policy and Programs, Arizona Public Service, Document ID EPA-HQ-OGC-2011-0929-0013, available at <u>www.regulations.gov</u> ("Finally, APS is concerned that Arizona was not properly consulted by EPA prior to entering into the proposed consent decree with the environmental plaintiffs. Given the lead role and considerable discretion given to states by Congress under the regional haze provisions of the CAA, it is axiomatic that EPA should have discussed with ADEQ the terms of the proposed consent decree *before* signing it.").
<sup>18</sup> In North Dakota, where EPA tried to ignore a major component of the State's Regional Haze submission (namely,

<sup>18</sup> In North Dakota, where EPA tried to ignore a major component of the State's Regional Haze submission (namely, North Dakota Department of Environmental Quality's Best Available Control Technology determination for the Milton R. Young power plan. EPA said, "Given our September 1, 2011 deadline to sign this notice of proposed rulemaking under the consent decree discussed in section III.C, we lack sufficient time to act on or consider this aspect of Amendment No. 1. Under CAA section 110(k)(2), EPA is not required to act on a SIP submittal until 12 months after it is determined to be or deemed complete. We have considered some of the documents related to the State's BACT determination for Milton R. Young Station and have included those documents in the docket for this proposed action." 76 Fed. Reg. 58579.

In promulgating a federal implementation plan for Regional Haze on Oklahoma, EPA stated, "We also are required by the terms of a consent decree with WildEarth Guardians, lodged with the U.S. District Court for the Northern District of California to ensure that Oklahoma's CAA requirements for 110(a)(2)(D)(i)(II) are finalized by

December 13, 2011. Because we have found the state's SIP submissions do not adequately satisfy either requirement in full and because we have previously found that Oklahoma failed to timely submit these SIP submissions, we have not only the authority but a duty to promulgate a FIP that meets those requirements." 76 Fed. Reg. 81732

<sup>19</sup> For more, see William Yeatman, EPA's Shocking New Mexico Power Grab, Competitive Enterprise Institute/Rio Grande Foundation joint white paper, October 2011

<sup>20</sup> In New Mexico, EPA used a putatively non-discretionary consent decree deadline to actually ignore the State's Regional haze submission. "We did receive a New Mexico RH SIP submittal on July 5, 2011, but it came several vears after the statutory deadline, and after the close of the comment period on today's action.3 In addition, because of the missed deadline for the visibility transport, we are under a court-supervised consent decree deadline with WildEarth Guardians of August 5, 2011, to have either approved the New Mexico SIP or to have implemented a FIP to address the 110(a)(2)(D)(i) provision. It would not have been possible to review the July 5, 2011 SIP submission, propose a rulemaking, and promulgate a final action by the dates required by the consent decree." 76 Fed. Reg. 52390. <sup>21</sup> Section 110(a)(2)(D)(i)

<sup>22</sup> Memorandum to Regional Air Division Director, Regions 1-10, August 15, 2006, p. 9,

http://www.epa.gov/ttn/oarpg/t1/memoranda/section110a2di sip guidance.pdf

<sup>23</sup> 76 Fed. Reg. 82219.

<sup>24</sup> New Jersev (proposed approval 3 January 2012); Minnesota, Virginia, Ohio (proposed approval 25 January 2012); Illinois, Delaware (proposed approval 26 January 2012); Alaska (proposed approval 26 February 2012); Georgia (proposed approval 27 February 2012); Rhode Island, New Hampshire, Maryland, North Carolina, Michigan, South Carolina, Vermont, Wisconsin, Alabama, Missouri, Iowa (proposed approval 28 February 2012)

<sup>25</sup> 40 C.F.R. §§ 51.302-51.306.

<sup>26</sup> 64 Fed. Reg. 35714

<sup>27</sup> Both Regional Haze and RAVI require Best Available Retrofit Technology. The difference between the two programs is that States get to decide which units are subject to Regional haze BART, whereas Interior Department officials and EPA officials determine which units are subject to RAVI BART. Unfortunately, the Interior Department has proved that it won't be a responsible check on EPA. In 2009, it decided to subject the Sherco Units 1 and 2 to RAVI BART, despite the fact Minnesota, at the time, was crafting a Regional Haze BART determination for the power plant. As such, the only thing that stands in the way of EPA "double dipping" on Regional Haze is the Department of the Interior, which is to say that the only thing preventing the Obama administration from imposing the same regulation twice on coal fired power plants is the Obama administration.

<sup>28</sup> 77 Fed. Reg. 3681.

<sup>29</sup> 77 Fed. Reg. 3689 ("Therefore, this proposed rule only addresses satisfaction of regional haze requirements and does not address whether Minnesota's plan addresses requirements that apply as a result of the certification of Sherco as a RAVI source. EPA will act on RAVI BART in a separate notice").

<sup>30</sup> See Xcel Energy, Resource Plan Update, Docket No E002/RP-10-825 before the Minnesota Public Utilities Commission, at 45, 46 (Dec. 1, 2011) ("In its June 2011 preliminary review of the MPCS's BART assessments, EPA Region 5 indicated that it believes BART for [Sherco] Units 1 and 2 should include "Selective Catalytic Reduction...Plant specific estimates for Sherco Unites 1 and 2 demonstrate that SCRs would cost customers upwards of \$250 million.").

<sup>31</sup> Visibility improvement data for New Mexico taken from Table 6, "NMED Modeled Maximim Impacts of the 98<sup>th</sup> Percentile Delta-dv Impacts from 2001-2003," 76 FR 502

<sup>32</sup> Visibility improvement data for Oklahoma taken from EPA's proposed Regional Haze federal implementation plan for Oklahoma, Table 9, "EPA Modeled Maximum Impacts Due To Dry Scrubbing of the 98th Percentile Delta-DV Impacts from 2001-2003," 76 FR 16186

<sup>33</sup> Visibility improvement data for North Dakota taken from North Dakota Regional Haze BART submittal by Great River Energy for Coal Creek Stations 1, 2 (GRE's modeling data was approved by North Dakota) Table 7-4 "Year 2000 Modeling Results"; Visibility improvement data for Antelope Valley Station was taken from State of North Dakota, Comments on U.S. EPA Region 8 Approval and Promulgation of Implementation Plans; North Dakota Regional Haze State Implementation Plan; Federal Implementation Plan for Interstate Transport of Pollution Affecting Visibility and Regional Haze," p 67.

<sup>34</sup> Henry, Ronald C., Estimating the Probability of the Public Perceiving a Decrease in Atmospheric Haze, Journal of Air & Waste Land Management Association, 55: 1760-1766, 2005