

## Supporting Statement A

### Visibility Valuation: Pilot Study

OMB Control Number 1024-0225

Terms of Clearance: None

#### General Instructions

A completed Supporting Statement A must accompany each request for approval of a collection of information. The Supporting Statement must be prepared in the format described below, and must contain the information specified below. If an item is not applicable, provide a brief explanation. When the question "Does this ICR contain surveys, censuses, or employ statistical methods?" is checked "Yes," then a Supporting Statement B must be completed. OMB reserves the right to require the submission of additional information with respect to any request for approval.

---

1. *Explain the circumstances that make the collection of information necessary. Identify any legal or administrative requirements that necessitate the collection.*

The National Park Service (NPS) is requesting approval to reinstate a currently expired information collection (OMB Control Number: 1024-0255). The reinstatement is needed to continue the process of developing a survey for an ongoing visibility valuation study. In 2008 and 2009, a series of focus groups in five states were conducted to develop survey questions. NPS is now requesting permission to continue the collection effort by conducting a pilot survey, which will be used to refine survey materials and test implementation parameters. Once the pilot is complete, a final survey will be developed and implemented through a separate information collection request (ICR).

Visibility valuation information is essential to evaluate the benefits and costs of state and federal efforts to improve air quality and assists the NPS in efficiently managing park units, where visual quality is fundamental to visitor experience (e.g., Meldrum et al., 2006). In addition, the NPS serves in an advisory capacity on regulatory measures to achieve Clean Air Act requirements (including the Regional Haze Rule, 40 CFR Part 51). Although several studies were conducted in the late 1970s and 1980s to estimate the benefits of visibility improvements (Brookshire et al., 1979; Rae, 1983; Tolley et al., 1986), non-market valuation methods have substantially evolved since these early studies were completed. These advancements provide opportunity to develop more accurate and reliable benefit measures.

Current evaluation of Federal and state air quality legislation or regulations, as well as regional plans or policies that impact NPS-managed areas, is based on visibility valuation information derived from Chestnut and Rowe, 1990 (e.g., see EPA, 2005). The vintage of this study aside, several limitations have been identified by regulators and stakeholders alike, including its limited sample frame (EPA, 2005; Leggett et al., 2004). Thus, the NPS seeks current visibility valuation information that will permit accurate evaluation of programs and policies affecting visibility in NPS-managed areas.

This collection will provide information required by the following laws, regulations, policies and statutes:

- 16 U.S.C. §a-1 NPS Organic Act
  - 42 U.S.C. §7475(d)(2)(B) - The Clean Air Act (CAA) - Sections 169A, 169B, and 110(a)(2)(j)
2. ***Indicate how, by whom, and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection. Be specific. If this collection is a form or a questionnaire, every question needs to be justified.***

The information collected to date through the conduct of focus groups has been used to refine the questionnaire and inform the design of the valuation questions. The pilot survey will provide data and information to ensure that the valuation questions are functioning properly. The final survey, which would be implemented through a separate ICR, will provide the NPS information needed to evaluate programs and policies to improve air quality and advise on regulatory measures to achieve Clean Air Act requirements (including the Regional Haze Rule, 40 CFR Part 51). This information is intended to be used to evaluate the benefits of programs and policies that may improve visibility conditions in non-urban National Parks and wilderness areas.

The pilot survey will be administered to samples in two multi-state regions: one consisting of Utah, Arizona, New Mexico and Colorado (Western Region) and a second consisting of Delaware, Virginia, West Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Mississippi and Florida (Eastern Region). These regions were selected because they encompass a broad range of current and expected future visibility conditions. The questionnaires will differ in the accompanying maps and pictures provided to respondents, as well as the baseline and improved visibility conditions specified in the valuation questions.

The questionnaire contains seven sections, as described in detail below:

**Section A: Background Questions**

Questions 1 and 2 are intended to orient the respondent to the context of implementing and funding public programs and gauge their confidence in various institutions; they follow from the National Opinion Research Center (NORC) General Social Survey (GSS).

**Section B: Provides information on haze and its effects on visibility**

Question 3 engages the respondent regarding personal experiences with haze following the information and comparison photographs

**Section C: Provides background information on National Parks and Wilderness Areas**

Questions 4 and 5 are intended to determine the respondent's level of awareness regarding these areas. Focus group results suggested that individuals did not understand Wilderness Areas in particular, so the purpose of this information is to bring respondents to a common level of understanding regarding the locations where visibility improvements will occur.

Question 6 is intended to determine whether the respondent is aware of and has visited any of the parks or wilderness areas in the visibility improvement region specified on the enclosed map. This information may be relevant in explaining responses to the valuation questions.

**Section D: Provides information on the sources of haze affecting the specified region**

Question 7 is intended to gauge the salience of this issue to respondents

Question 8 is intended to gauge the respondent's level of knowledge regarding sources of haze

Note that here and elsewhere in the survey extensive background and technical information will be presented. This information is essential to establish the appropriate context for respondents to answer the valuation questions. Several of the questions following these information sections are intended to maintain the respondent's attention and focus.

**Section E: Provides information on improving visibility conditions, accompanying picture sets and example programs that will be evaluated in the valuation questions**

Question 9 is intended to gauge the respondent's reaction to and confidence in the information describing ways to reduce/control haze

Question 10 is intended to determine respondent's appreciation of different haze levels in the photograph sets that will be the basis for alternative programs described in the valuation questions

**Section F: Provides information on each of the attributes that comprise the valuation questions- ecosystem changes, health changes, program timing and cost (visibility improvements are addressed in the previous section) and the set of valuation questions**

Questions 11 to 14 are designed to encourage the respondent to reflect on the attribute information to provide appropriate context for answering the valuation questions.

Questions 15 to 20 are the set of valuation questions. Each is a "single-choice" question where the respondent chooses between a specified visibility improvement program and the status quo. The levels of the attributes described above vary across questions according to a specified experimental design. Six replications of the question are administered to each respondent to maximize the efficiency of information collected while balancing potential for respondent fatigue.

The experimental design was developed by Dr. Barbara Kanninen of BK Econometrics, LLP in consultation with the study team. The design consists of four sets of six choice questions with varying attribute levels (Table 1) that will be randomly assigned to respondents.

**Table 1. Choice Question Attributes and Levels**

Attribute	Description	Levels
Visibility Improvement	Bar chart depicting number of days in the year associated with each photograph in picture set	25, 50, 75 and 100% progress toward natural haze conditions
Ecosystem Impacts	Particles that form haze can affect water quality, soil, plants, and in turn, the growth and variety of plants and animals	No Change or A Small Reduction
Health Impacts	Some park visitors who have respiratory problems may experience coughing or shortness of breath on days with high levels of human-caused haze	No Change or A Small Reduction
Timing	Number of years until specified program improvements are realized	10 or 20 years
Cost	Recurring annual cost to household	15, 35, 65, \$115

**Section G: Contains follow-up, benchmarking and demographic questions**

Questions 21 to 25 are designed to elicit information regarding the credibility of the specified valuation scenario and respondent reactions to the valuation questions. This information is essential to determine if additional information or alternative language is needed to adjust the valuation scenarios prior to the full survey.

Questions 26 to 30 are “benchmarking” questions. The same is true of the standard demographic questions contained in 31 to 36. In addition to providing information on the representativeness of respondents with respect to the general population, data from these questions may also be used to explain responses to the valuation questions.

- 3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g., permitting electronic submission of responses, and the basis for the decision for adopting this means of collection. Also describe any consideration of using information technology to reduce burden and specifically how this collection meets GPEA requirements.**

Survey data will be collected through mail administration of the questionnaires, no automated or electronic techniques will be used.

- 4. Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for use for the purposes described in Item 2 above.**

Prior to initiation of this study an exhaustive review of the visibility valuation literature was undertaken to assess the quality and applicability of existing information. Results of this review are summarized in Table 2 below. Information currently used for policy purposes was collected over 15 years ago and is limited in geographic scope. To our knowledge, no other agency is currently collecting visibility valuation data related to national parks and wilderness areas.

**Table 2. Summary of Visibility Valuation Literature Review**

Study	Summary	Presentation of Changes in Visibility	Payment Vehicle	Survey Details			Attributes Potentially Relevant to New Study Design	Other Comments
				Mode	Sample Frame	Sample Size		
Brookshire, d'Arge, Schulze, and Thayer (1979)	Contingent valuation study designed to estimate WTP for local improvement in air quality. The improvement is defined as a change in air quality from poor to fair, from poor to good, or from fair to good. These different levels of air quality were described in separate CV questions as being linked to aesthetic effects only or aesthetic effects and health effects combined.	Six separate color photographs depicting three different visibility conditions (poor, fair, and good, corresponding to visibility of 2, 12, and 28 miles, respectively). All photographs were of urban Los Angeles vistas.	Increased monthly utility bill or lump sum monthly payment	In-person	Residents of the Los Angeles area	290	<ul style="list-style-type: none"> <li>• Provided brochure to respondents on the health effects of air pollution.</li> <li>• Specified the amount of time it would take to achieve the visibility improvement (2 to 10 years).</li> </ul>	<ul style="list-style-type: none"> <li>• Did not present the distribution of air pollution.</li> <li>• Respondents may have been paying for perceived health improvements in addition to visibility, even when CV question asked respondent to focus on visibility alone.</li> <li>• Did not hold atmospheric conditions or scene constant in presentation of different visibility levels.</li> </ul>
Rowe, d'Arge, and Brookshire (1980)	Contingent valuation study designed to estimate WTP for visibility improvements due to changes in energy production in the Four Corners Region of the Southwest. Study develops estimates of WTP for improvements of visual range from 25 miles to 50 and 75 miles.	Six separate color photographs depicting two different vistas under three different visibility conditions (visual range of 25, 50, and 75 miles).	Monthly charge on utility bill, payroll deduction, and increased user fees	In- person	Residents of Farmington, NM and recreationalists at Navajo Reservoir	696	<ul style="list-style-type: none"> <li>• Charge on utility bill may be a natural payment vehicle.</li> </ul>	<ul style="list-style-type: none"> <li>• Did not hold atmospheric conditions constant in presentation of different visibility levels.</li> <li>• Did not present the distribution of visibility.</li> <li>• Respondents may have been paying for perceived health improvements rather than visibility.</li> </ul>

**Table 2. Summary of Visibility Valuation Literature Review**

Study	Summary	Presentation of Changes in Visibility	Payment Vehicle	Survey Details		Attributes Potentially Relevant to New Study Design	Other Comments
				Mode	Sample Frame Sample Size		
Rae (1983a, 1981a, 1981b)	Contingent ranking study designed to estimate WTP for visibility improvements at Mesa Verde and Great Smoky National Parks. Respondents asked to rank order multiple alternatives with varied visual quality, entry fee and other park attributes. Visibility conditions defined as intense plume, intense haze, moderate haze and clear at Mesa Verde; intense haze, moderate haze, slight haze, clear and rain (fixed) at Great Smoky. Exercise conducted under certainty (visibility conditions known prior to visit) and uncertainty (probability of given condition) for both parks. At Mesa Verde, changes in probability corresponded to emissions control scenarios at the Four Corners power plant; hypothetical improvement scenarios were utilized for Great Smoky.	Mesa Verde: Four slides depicting same vista under intense plume (no visual range), intense haze, moderate haze and clear conditions (visual range of 119, 156 and 256 km., respectively). Great Smoky: Four slides depicting same vista under intense haze, moderate haze, slight haze and clear conditions (visual range of 10, 20, 50 and 100 km., respectively). In both cases, slides were chosen from the same processing batch to ensure consistency. All slides were also projected on a screen at the front of the recreational vehicle where the surveys were administered.	Park entry fee	In-person	Visitors to Mesa Verde and Great Smoky Parks (intercepted at visitors' centers)	205 (Mesa Verde), 213 (Great Smoky)	<ul style="list-style-type: none"> <li>• More sophisticated variant on technique (conjoint analysis) may be useful in identifying preferences for different aspects of visibility improvements and controlling for other embedded benefits.</li> <li>• Method is limited in terms of information collected and has not been applied in subsequent valuation research.</li> <li>• Certain aspects of results cast doubt on survey reliability. For example, insignificant (statistically) or marginally significant parameter estimates on visibility measures in general; results that suggest slight haze condition is preferred to the clear condition (Great Smoky).</li> <li>• Respondents may have been considering health or other benefits when considering emissions reductions and no Four Corners Plant scenarios (Mesa Verde).</li> </ul>



**Table 2. Summary of Visibility Valuation Literature Review**

Study	Summary	Presentation of Changes in Visibility	Payment Vehicle	Survey Details			Attributes Potentially Relevant to New Study Design	Other Comments
				Mode	Sample Frame	Sample Size		
Rae (1983b)	Contingent ranking study designed to estimate WTP/WTA for changes in visibility in Cincinnati, OH. Valuation scenario based on future availability of hypothetical coal-derived fuel for home heating. Respondents asked to rank order multiple alternatives with varied visual quality, annual cost, thermostat settings and health effects (defined as number of days of temporary lung and eye irritation). Respondents were also asked a contingent valuation question regarding visibility improvement at Great Smoky National Park.	Three photographs of same scene from park in downtown Cincinnati (the photos were also projected on a screen at the front of the room where respondents took the survey). Photos were taken in the a.m. in May; survey administered in late June, early July ('82). Visibility conditions defined as clear (27 km. visual range), median (19 km.) and haze (5 km.). Respondents asked to rank alternatives where visual condition present "most of the time," as well as distribution based on percentage of days present (including fixed % of precipitation). NOAA weather station data from the Cincinnati airport were analyzed to develop/validate ranges. Great Smoky question concerned improvement in visual range from 20 km to 100 km, as depicted in two photographs.	Annual home heating costs (Cincinnati), unspecified (Great Smoky)	In-person (26 group sessions at two area hotel conference rooms)	Individuals recruited from Cincinnati SMSA	347	<ul style="list-style-type: none"> <li>• Authors use extensive weather station data to inform visibility distribution (though note that data are subject to bias due to different observers).</li> <li>• More sophisticated variant on technique (conjoint analysis) may be useful in identifying preferences for different aspects of visibility improvements and controlling for other embedded benefits.</li> <li>• Authors attempt to account explicitly for health effects and find significant value for visibility improvements independent of such effects.</li> <li>• Survey asked respondents about health status and whether they modify recreational or other behavior dependent on air quality.</li> </ul>	<ul style="list-style-type: none"> <li>• Method is limited in terms of information collected and has not been applied in subsequent valuation research.</li> <li>• Respondents were also asked a follow-up contingent valuation question regarding visibility improvement in Cincinnati that yielded substantially lower values than those derived from the ranking method for an equivalent change.</li> </ul>

**Table 2. Summary of Visibility Valuation Literature Review**

Study	Summary	Presentation of Changes in Visibility	Payment Vehicle	Survey Details			Attributes Potentially Relevant to New Study Design	Other Comments
				Mode	Sample Frame	Sample Size		
Schulze et al. (1983)	Contingent valuation study designed to estimate WTP for improvements in typical air quality levels at Grand Canyon and in the southwestern parklands region. The study also estimated WTP to prevent a visible plume in Grand Canyon.	Twenty separate 8" by 10" color photographs depicting five different visibility conditions (poor, below average, average, above average, and excellent) at four different sites (Grand Canyon Trumbull, Grand Canyon Desert View, Mesa Verde, and Zion). The Grand Canyon plume was depicted through two separate photographs taken at the same time of day, one with a plume and one without.	Increase in electric utility bills and higher entrance fees	In-person	Residents of Denver, Los Angeles, Albuquerque, and Chicago	450	<ul style="list-style-type: none"> <li>• Authors found increasing marginal WTP for air quality improvements-respondents valued the incremental improvement from above average to excellent much more than they valued any other incremental improvement (e.g., from average to above average).</li> <li>• Distance from the Southwest region had little effect on WTP to preserve visibility.</li> <li>• Neither past nor anticipated visits to the Grand Canyon were significantly related to WTP for visibility improvements.</li> <li>• Aggregate benefits obtained by using the estimated WTP function to predict the "average" household's WTP for each state.</li> </ul>	<ul style="list-style-type: none"> <li>• Did not present the distribution of visibility.</li> <li>• Respondents may have been paying for perceived health improvements in addition to visibility.</li> </ul>

**Table 2. Summary of Visibility Valuation Literature Review**

Study	Summary	Presentation of Changes in Visibility	Payment Vehicle	Survey Details			Attributes Potentially Relevant to New Study Design	Other Comments
				Mode	Sample Frame	Sample Size		
Loehman, Boldt, and Chaikin (1984), Loehman, Park, and Boldt (1994)	Contingent valuation study designed to estimate WTP for improvements in air quality related to both visibility and health in the San Francisco Bay Area. Improvement is defined as a specific number of annual days under three different visibility conditions (clear – visual range > 10 miles, moderate – visual range 6 to 10 miles, and poor – visual range < 5 miles) and a specific number of annual days under five different health conditions (good, moderate, unhealthy, very unhealthy, or hazardous)	Nine separate color photographs depicting three different Bay-area vistas under three different visibility conditions (clear, moderate, and poor). Photographs were altered to depict uniform light conditions for each scene.	Monthly payment to local air quality management district	In-person	Residents of the San Francisco Bay area	412	<ul style="list-style-type: none"> <li>Succeeded in clearly presenting information about distribution of both visibility and health.</li> <li>If the CV question had been dichotomous choice, then this survey would have been equivalent to a conjoint survey.</li> <li>Warm-up exercise in survey required respondent to estimate the current number of clear, moderate, and poor visibility days by season.</li> <li>EPA's PSI rating of air quality used to define the five different health levels; the survey provided a clear and succinct summary of the health effects associated with each level (including likelihood of occurrence).</li> </ul>	<ul style="list-style-type: none"> <li>Photos were taken from aircraft or tall buildings and therefore represent atypical perspective of Bay Area.</li> <li>Mechanism for air quality improvement not described to respondent.</li> <li>Analysis indicated that WTP for health and visibility improvements not independent of one another.</li> </ul>

**Table 2. Summary of Visibility Valuation Literature Review**

Study	Summary	Presentation of Changes in Visibility	Payment Vehicle	Survey Details			Attributes Potentially Relevant to New Study Design	Other Comments
				Mode	Sample Frame	Sample Size		
Tolley et al. (1986)	Contingent valuation study designed to estimate WTP for local (respondent's city), regional (east or west of Mississippi), and national visibility improvements. The improvement is defined as a 5-, 10-, or 20- mile increase in average visual range for the local improvement and as a 10-mile increase in average visual range for the regional and national improvements. A follow-up survey included CV questions that focused on the number of days with increased visibility and on the seasonality of the improvement.	Color photographs depicting scenes at three different visibility levels (visual ranges of 4, 13, and 30 miles). For the main survey, the scenes were from Chicago, Shenandoah National Park, and the Grand Canyon. For the follow-up survey, the scenes were from the respondent's local city, Niagara Falls, and the Grand Canyon. For the main survey, different visual ranges were depicted by selecting different photographs. For the follow-up survey, different visual ranges were depicted by air brushing a single photograph.	No specific vehicle used in main survey, increased electric bills used in follow-up survey	In-person	Residents of Atlanta, Boston, Cincinnati, Miami, Mobile, Washington D.C., and Denver	792 (main survey)	<ul style="list-style-type: none"> <li>Survey asked respondents about participation in activities that might be affected by visibility (e.g., sports, photography, flying, bird watching, hunting, attending sporting events) and potential changes in this participation under hypothetical improvements in visibility.</li> <li>Survey asked about respondent's eyesight, which might affect WTP for visibility improvements.</li> <li>CV question included information on the amount of money the average household pays monthly for private goods and various public programs.</li> </ul>	<ul style="list-style-type: none"> <li>The CV questions asked about changes in visibility that were different from the changes depicted in the photographs.</li> <li>In the main survey, all photographs were of Chicago scenes, despite the fact that many respondents lived in other cities.</li> <li>Respondents may have been paying for perceived health improvements rather than visibility (the CV question told respondents that the pollution control program would only address pollutants that affect visibility).</li> <li>Did not hold atmospheric conditions constant in presentation of different visibility levels (main survey).</li> </ul>

**Table 2. Summary of Visibility Valuation Literature Review**

Study	Summary	Presentation of Changes in Visibility	Payment Vehicle	Survey Details			Attributes Potentially Relevant to New Study Design	Other Comments
				Mode	Sample Frame	Sample Size		
Balson et al. (1990); Balson, Carson, and Mitchell (1991)	Contingent valuation study designed to estimate WTP to improve visibility in Grand Canyon National Park. Five different improvements are evaluated, ranging from an improvement in visual range from 22 miles to 172 miles occurring on 10 winter days, to a shift in the entire distribution of summer and winter visibility.	Twelve separate 8" by 12" color photographs of one Grand Canyon scene, depicting six different visibility levels (low, medium, and high visibility under baseline and improved conditions) for two different seasons (summer and winter). Each season is presented on a separate folding photoboard, with baseline conditions displayed on the left-hand side of the board and improved conditions displayed on the right-hand side of the board.	Increased annual electric bill or annual rent	In-person	Residents of St. Louis and San Diego	202	<ul style="list-style-type: none"> <li>Focus group respondents felt that it was much easier to identify visibility changes in 8" by 12" photos than in 7" by 10" photos.</li> <li>The folding photoboard -- with baseline conditions on one half and improved conditions on the other -- seems to be a useful approach to presenting a shift in the distribution of visibility.</li> </ul>	<ul style="list-style-type: none"> <li>The majority of respondents were not willing to pay any amount for four of the five visibility improvement programs.</li> <li>WTP scenario focuses only on the Grand Canyon and may therefore have limited applicability to other parks.</li> </ul>
Carson, Mitchell, and Ruud (1990, 1989)	Contingent valuation study designed to estimate WTP for visibility improvements in Cincinnati, OH. Ten different pollution-reduction programs were evaluated by each respondent, each of which led to a change in the number of annual days under low, medium, and high visibility conditions. For half of the sample, the respondents were also provided information about the change in the number of annual days with no health effects, mild health effects, and moderate health effects.	Nine 5" by 6" color photographs depicting three different Cincinnati scenes under three different visibility conditions (visual ranges of 1-6 miles, 7-14 miles, and 15+ miles).	Not specified	In-person	Residents of Cincinnati	151	<ul style="list-style-type: none"> <li>Presented ten different air quality improvement programs that offer various combinations of visibility (and health for half of the respondents), then statistically estimate the relationship between WTP and these two attributes.</li> <li>For respondents offered health and visibility improvements, only about one-third made tradeoffs between health and visibility in ranking the ten programs. The remaining two thirds ranked the programs based exclusively on health or visibility.</li> </ul>	<ul style="list-style-type: none"> <li>Authors found that respondents were not able to value visibility separately from health.</li> </ul>

**Table 2. Summary of Visibility Valuation Literature Review**

Study	Summary	Presentation of Changes in Visibility	Payment Vehicle	Survey Details			Attributes Potentially Relevant to New Study Design	Other Comments
				Mode	Sample Frame	Sample Size		
Chestnut and Rowe (1990)	Contingent valuation study designed to estimate WTP for improvement in visibility at national parks in the Southwest, the Southeast, and California. The improvement is defined as a change in average visibility from the current 50 <sup>th</sup> percentile of visibility conditions to the 75 <sup>th</sup> and 90 <sup>th</sup> percentiles. The survey also obtained WTP to prevent deterioration of average visibility from the 50 <sup>th</sup> percentile to the 10 <sup>th</sup> percentile. The visual ranges associated with these percentiles differed across the park regions.	Twelve separate 3" by 5" color photographs depicting four different visibility percentiles (10 <sup>th</sup> , 50 <sup>th</sup> , 75 <sup>th</sup> , and 90 <sup>th</sup> percentiles for summer visibility) at three different national parks (Yosemite, Grand Canyon, and Shenandoah), presented on a 16" by 17" glossy sheet.	Increased prices and taxes	Mail	Residents of Arizona, California, Missouri, New York, and Virginia	1,632	<ul style="list-style-type: none"> <li>A telephone follow-up survey of non-respondents included questions about past visits to national parks and the importance of protecting visibility in national parks. Identical questions were included in the mail survey. This allowed the researchers to evaluate the potential for response bias without including CV questions in the telephone survey.</li> <li>Non-use related motives were as important or more important than use-related motives for protecting visibility.</li> </ul>	<ul style="list-style-type: none"> <li>Despite attempts to encourage respondents to focus only on visibility protection, responses to follow-up questions indicated that respondents were valuing more than just visibility improvements.</li> <li>40 percent of the respondents provided the same WTP for all three visibility improvement scenarios.</li> </ul>

**Table 2. Summary of Visibility Valuation Literature Review**

Study	Summary	Presentation of Changes in Visibility	Payment Vehicle	Survey Details			Attributes Potentially Relevant to New Study Design	Other Comments
				Mode	Sample Frame	Sample Size		
Crocker and Shogren (1991)	Contingent valuation study designed to estimate WTP (option prices) for improved visibility from a central Oregon Cascades wilderness site and a Portland, Oregon urban park site. Respondents were first asked to rank-order four alternative vistas, then estimate probability of occurrence of each and finally state willingness to pay to guarantee each (starting with most preferred) during the current visit (Cascades) or entire summer (Portland).	Computer-generated haze levels superimposed on 8 by 10 photographs. Visual ranges of 309, 121, 88 and 53 km (Cascades) and 82, 43,30 and 20 km (Portland), corresponding to the 90 <sup>th</sup> , 50 <sup>th</sup> , 20 <sup>th</sup> and 2.5 <sup>th</sup> percentiles of visual range cumulative distributions. Interviews conducted outdoors in late summer 1985 in the immediate vicinity of the photo sites.	Increase in entry fee (Cascades), one-time payment to fund established to guarantee provision (Portland)	In-person	Individuals intercepted on-site	99 (Cascades), 67 (Portland)	<ul style="list-style-type: none"> <li>Elicited individuals' subjective probabilities for visual states (may provide useful comparison to objective).</li> <li>Authors also examined additional dimensions in valuation scenario- for example, time preference. Individuals were asked to adjust option price bids for a 2-year delayed resolution and a permanent resolution; these implied marginal rates of time preference between 10 and 50%.</li> <li>Individuals were asked option price for resolution without access (i.e., guarantee condition without access to site)- which the authors attribute to existence value (roughly 10% of same resolutions with access).</li> <li>Finally, respondents were asked to value extension of resolution to the entire state of Oregon- these values were nearly equivalent statistically for the Portland sample (but not the Cascades sample).</li> <li>Authors enter visual ranges in analysis in log form citing Fechner's law- that is that "the perceived strength of a just-noticeable increment in a sensation is proportional to the logarithm of the stimulus."</li> </ul>	<ul style="list-style-type: none"> <li>Inappropriate to generalize for policy purposes because analysis predicated on respondents' subjective probabilities.</li> <li>Unclear whether any effort was made to address collateral benefits.</li> </ul>

**Table 2. Summary of Visibility Valuation Literature Review**

Study	Summary	Presentation of Changes in Visibility	Payment Vehicle	Survey Details			Attributes Potentially Relevant to New Study Design	Other Comments
				Mode	Sample Frame	Sample Size		
McClelland et al. (1991)	Contingent valuation study designed to estimate WTP for improvements in air quality in Chicago and Atlanta. Improvement defined as 25 additional days per year with long visual range (40 miles or more) and 25 fewer days per year with short visual range (5 miles).	Color photographs of three different vistas (skyline, residential street, and park), digitally altered to produce three different visibility conditions (visual ranges of 5 miles, 15 miles, and 40 miles or more) for each photograph.	Higher prices for electricity and pollution control equipment on vehicles	Mail	Residents of Atlanta and Chicago metropolitan areas	494	<ul style="list-style-type: none"> <li>Use of digital techniques to alter photographs allowed researchers to hold other factors constant (e.g., weather or light conditions).</li> <li>Bar chart used to depict number of days under different air quality conditions (may help facilitate respondent interpretation).</li> </ul>	<ul style="list-style-type: none"> <li>CV question specifies that improvement in air quality would lead to health benefits, but it does not describe these benefits</li> <li>Respondents were asked ex post to allocate a portion of their WTP among various categories of benefits (e.g., improved visual air quality, healthier air, and decreased soiling).</li> </ul>
Stevens et al. (2000)	Conjoint ranking and contingent valuation study designed to estimate WTP (WTA) for visibility improvement (decline) in White Mountain National Forest, NH. The visibility change is defined in terms of the typical summer visibility level (the quantity of the improvement is not reported in the paper).	Computer images of the Great Gulf Wilderness, digitally modified using Win Haze.	Higher prices for electricity	In-person and mail	Visitors to Great Gulf Wilderness, NH (subgroup 1); residents of Northampton/Amherst, MA (subgroup 2); residents of NH, VT, and ME (subgroup 3); residents of NH, VT, ME, MA, RI, and CT (subgroup 4)	473		<ul style="list-style-type: none"> <li>Did not present the distribution of visibility.</li> <li>Respondents may have been paying for perceived health improvements in addition to visibility.</li> <li>Commodity is very narrowly defined, so that policy relevance of results is questionable.</li> </ul>



- 5. *If the collection of information impacts small businesses or other small entities, describe any methods used to minimize burden.***

This information collection will only be sent to households and will not impact small businesses or other small entities.

- 6. *Describe the consequence to Federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.***

Failure to conduct this full study would force the NPS to continue to rely on outdated information, potentially compromising the accuracy and reliability of policy evaluations. The pilot study is a necessary next step to finalize survey materials and implementation parameters, thereby avoiding potential duplication of effort and added costs.

- 7. Explain any special circumstances that would cause an information collection to be conducted in a manner:**

- \* requiring respondents to report information to the agency more often than quarterly;
- \* requiring respondents to prepare a written response to a collection of information in fewer than 30 days after receipt of it;
- \* requiring respondents to submit more than an original and two copies of any document;
- \* requiring respondents to retain records, other than health, medical, government contract, grant-in-aid, or tax records, for more than three years;
- \* in connection with a statistical survey that is not designed to produce valid and reliable results that can be generalized to the universe of study;
- \* requiring the use of a statistical data classification that has not been reviewed and approved by OMB;
- \* that includes a pledge of confidentiality that is not supported by authority established in statute or regulation, that is not supported by disclosure and data security policies that are consistent with the pledge, or which unnecessarily impedes sharing of data with other agencies for compatible confidential use; or
- \* requiring respondents to submit proprietary trade secrets, or other confidential information, unless the agency can demonstrate that it has instituted procedures to protect the information's confidentiality to the extent permitted by law.

No special circumstances apply to this information collection.

- 8. If applicable, provide a copy and identify the date and page number of publication in the Federal Register of the agency's notice, required by 5 CFR 1320.8(d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and in response to the PRA statement associated with the collection over the past three years, and describe actions taken by the agency in response to these comments. Specifically address comments received on cost and hour burden.**

Describe efforts to consult with persons outside the agency to obtain their views on the

**availability of data, frequency of collection, the clarity of instructions and recordkeeping, disclosure, or reporting format (if any), and on the data elements to be recorded, disclosed, or reported.**

**Consultation with representatives of those from whom information is to be obtained or those who must compile records should occur at least once every three years — even if the collection of information activity is the same as in prior periods. There may be circumstances that may preclude consultation in a specific situation. These circumstances should be explained.**

A Federal Register notice was published on March 7, 2011 [76 FR 12367].

Only one comment was received, via e-mail, for this one-time information collection as a result of the *Federal Register* notice. This commenter inquired about survey purpose and methods.

Response: The agency explained (via e-mail reply) that the purpose of the survey was to develop information on the benefits of improving visibility conditions in class I areas using established stated-preference valuation methods. In addition, the commenter was provided a copy of the study plan.

In addition to our Federal Register notice, we solicited comments from survey research, non-market valuation and visibility experts participating in the study, as well as outside peer reviewers. We asked them to provide feedback on survey design, including length and clarity.

Dr. Richard Carson,  
Professor, Department of  
Economics,  
University of California, San  
Diego,  
(858) 534-3384

Dr. Kevin Boyle,  
Professor and Department  
Head,  
Agricultural and Applied  
Economics,  
Virginia Tech University,  
(540) 231-2907

John Molenaar,  
Air Resource Specialists  
(970) 484-7941

Dr. Vic Adamowicz,  
Distinguished University Professor,  
Department of Rural Economy,  
University of Alberta,  
(780) 492-4603

Dr. William Schulze, Professor  
Applied Economics and  
Management,  
Department of Applied Economics  
and Management  
Cornell University,  
(607) 255-9611.

Finally, comments on the initial visibility valuation literature review were solicited from a broad stakeholder group. The following individuals/entities provided comments:

- Chuck Layman, Executive Director, Central Regional Air Planning Association
- Timothy McClive, Chief Economist, Edison Electric Institute
- Naresh Kumar, Electric Power Research Institute
- Susan Wierman, Executive Director, Mid-Atlantic Regional Air Management Association
- John Hornback, Executive Director, Visibility Improvement State and Tribal Association of the Southeast
- Jeff Blend, Air, Energy and Pollution Prevention Bureau, Montana Department of Environmental Quality

**9. Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.**

A monetary incentive of \$2 will be provided with the survey materials. This amount is provided as a token of appreciation aimed to build a social exchange between the organizations making the survey request and the individual (Dillman, 1978; Dillman, 2000), to the extent possible. The use of modest monetary incentives has been shown to significantly increase survey response rates (Rathbun and Baumgartner, 1996 and Warriner et al., 1996). Furthermore, incentives have been shown to reduce nonresponse bias by increasing cooperation, particularly among those who are not interested or involved in the survey topic (Groves, Singer, and Corning, 2000; Groves, Presser, and Dipko, 2004; Groves et al., 2006). Thus, the use of incentives is instrumental to increasing response rates and reducing nonresponse bias. Incentives are not expected to be used in the telephone follow-up survey of non-respondents.

**10. Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy.**

The anonymous nature of responses will be described in the pilot questionnaire. Evaluation and statistical analysis of collected information will be kept independent of the identity of individual respondents. Any information that identifies individuals will be accessible only to the study team, except as required by law.

**11. Provide additional justification for any questions of a sensitive nature, such as sexual**

**behavior and attitudes, religious beliefs, and other matters that are commonly considered private. This justification should include the reasons why the agency considers the questions necessary, the specific uses to be made of the information, the explanation to be given to persons from whom the information is requested, and any steps to be taken to obtain their consent.**

No questions of a sensitive nature will be asked.

**12. Provide estimates of the hour burden of the collection of information. The statement should:**

- \* **Indicate the number of respondents, frequency of response, annual hour burden, and an explanation of how the burden was estimated. Unless directed to do so, agencies should not conduct special surveys to obtain information on which to base hour burden estimates. Consultation with a sample (fewer than 10) of potential respondents is desirable. If the hour burden on respondents is expected to vary widely because of differences in activity, size, or complexity, show the range of estimated hour burden, and explain the reasons for the variance. Generally, estimates should not include burden hours for customary and usual business practices.**
- \* **If this request for approval covers more than one form, provide separate hour burden estimates for each form and aggregate the hour burdens.**
- \* **Provide estimates of annualized cost to respondents for the hour burdens for collections of information, identifying and using appropriate wage rate categories. The cost of contracting out or paying outside parties for information collection activities should not be included here. Instead, this cost should be included under "Annual Cost to Federal Government."**

The pilot study will involve three surveys. The samples for the two multi-state regions will be drawn from the USPS Computerized Delivery Sequence File. A sub-sample of non-respondents will be contacted by either phone or mail to complete a short follow-up survey:

- **General Population Mail Survey-** 3,200 households total will be contacted. Assuming a 25% response rate, this implies 800 respondents and 2,400 non-respondents.
- **Nonrespondent survey** – A sample of 1,200 nonrespondents with matched telephone numbers will be contacted to complete the follow-up survey. Assuming a 10% response rate, this implies 120 respondents. In addition, a sample of 480 nonrespondents without matched telephone numbers will be contacted via Priority Mail to complete the same abbreviated survey. Assuming a 25% response rate, this implies 120 respondents.
- We assume that respondents will spend 20 minutes completing the survey, and non-respondents spend five minutes completing the non-respondent survey. We estimate the total burden of this collection to be 287 hours (Table 3).

**Table 3. Total Estimated Burden**

Respondents	Responses	Completion Time	Burden Hours
General Population Mail Survey	800	20 minutes	267
Nonrespondent Surveys	240	5 minutes	20
<b>TOTAL</b>			<b>287</b>

We estimate the total annual dollar value of this collection to be \$8,073 (Table 4). We multiplied the estimated burden hours by \$28.13 (for individuals or households). This wage figure includes a benefits multiplier and is based on the National Compensation Survey: Occupational Wages in the United States published by the Bureau of Labor Statistics Occupation and Wages, (BLS news release USDL-10-1687 for Employer Costs for Employee Compensation—June 2011 at - <http://www.bls.gov/news.release/pdf/ecec.pdf>), dated September 8, 2011).

**Table 4. Estimated Dollar Value of Burden Hours**

Activity	Sector	Annual Number of Responses	Total Annual Burden Hours	Dollar Value of Burden Hours (Including Benefits)	Total Dollar Value of Annual Burden Hours
Completing Survey	Private Individuals	1040	287	\$28.13	\$8,073

**13. Provide an estimate of the total annual non-hour cost burden to respondents or recordkeepers resulting from the collection of information. (Do not include the cost of any hour burden already reflected in item 12.)**

- \* The cost estimate should be split into two components: (a) a total capital and start-up cost component (annualized over its expected useful life) and (b) a total operation and maintenance and purchase of services component. The estimates should take into account costs associated with generating, maintaining, and disclosing or providing the information (including filing fees paid for form processing). Include descriptions of methods used to estimate major cost factors including system and technology acquisition, expected useful life of capital equipment, the discount rate(s), and the time period over which costs will be incurred. Capital and start-up costs include, among other items, preparations for collecting information such as purchasing computers and software; monitoring, sampling, drilling and testing equipment; and record storage facilities.

- \* If cost estimates are expected to vary widely, agencies should present ranges of cost burdens and explain the reasons for the variance. The cost of purchasing or contracting out information collection services should be a part of this cost burden estimate. In developing cost burden estimates, agencies may consult with a sample of respondents (fewer than 10), utilize the 60-day pre-OMB submission public comment process and use existing economic or regulatory impact analysis associated with the rulemaking containing the information collection, as appropriate.
- \* Generally, estimates should not include purchases of equipment or services, or portions thereof, made: (1) prior to October 1, 1995, (2) to achieve regulatory compliance with requirements not associated with the information collection, (3) for reasons other than to provide information or keep records for the government, or (4) as part of customary and usual business or private practices.

There is no non-hour cost burden, recordkeeping nor any fees associated with collection of this information.

**14. Provide estimates of annualized cost to the Federal government. Also, provide a description of the method used to estimate cost, which should include quantification of hours, operational expenses (such as equipment, overhead, printing, and support staff), and any other expense that would not have been incurred without this collection of information.**

The total annual cost to the Federal Government is \$311,291. This includes the cost to the Federal Government for salaries and benefits for administering this information collection (\$5,891) and operational expenses (\$305,400). Table 5 below shows Federal staff and grade levels associated with this information collection. We used the Office of Personnel Management Salary Table 2011-DEN ([http://www.opm.gov/flsa/oca/11tables/html/den\\_h.asp](http://www.opm.gov/flsa/oca/11tables/html/den_h.asp)) to determine the hourly rate. We multiplied the hourly rate by 1.5 to account for benefits (as implied by the BLS news release USDL-10-1687). Operational expenses are listed in Table 6.

**Table 5. Federal Employee Salaries and Benefits**

Position	Grade/ Step	Hourly Rate	Hourly Rate incl. benefits (1.5 x hourly pay rate)	Estimated time (hours)	Annual Cost
NPS ARD	13/6	\$49.09	\$73.64	80	\$5,891

**Table 6. Operational Expenses**

Operational Expenses	Estimated Cost
Contract Support	
<ul style="list-style-type: none"> <li>• Survey materials preparation, coordination, oversight of survey implementation, data analysis and reporting, and database development and maintenance</li> </ul>	\$119,000
<ul style="list-style-type: none"> <li>• Monetary Incentive (\$2 per respondent)</li> </ul>	\$6,400
Survey Support	
<ul style="list-style-type: none"> <li>• Sample procurement, survey printing, postage, telephone follow-up, data entry, etc.</li> </ul>	\$180,000
<b>Total</b>	<b>\$305,400</b>

**15. Explain the reasons for any program changes or adjustments in hour or cost burden.**

This is a reinstatement of a previously approved collection that expired January 31, 2010. The early approval was for a series of focus groups conducted in five states to develop survey materials. This request for reinstatement is needed to continue to conduct a pilot survey, which will be used to test survey materials and implementation parameters. Once the pilot is complete, a final survey will be developed and implemented.

**16. For collections of information whose results will be published, outline plans for tabulation and publication. Address any complex analytical techniques that will be used. Provide the time schedule for the entire project, including beginning and ending dates of the collection of information, completion of report, publication dates, and other actions.**

The results of the pilot survey will be summarized in a report for purposes of internal review by the study team and NPS to inform full implementation of the survey. Data tabulation will include response frequencies and measures of central tendency, as appropriate. Responses to valuation questions will be analyzed using standard discrete-choice modeling techniques (e.g., see Louviere et al., 2000 and Holmes and Adamowicz, 2003).

The estimated schedule for the pilot study is as follows:

- Materials Preparation & Coordination      June 1 - June 30 2012
- Pilot Survey Implementation              July 1 - August 15 2012
- Data analysis                                      August 15 - September 30 2012

Given that this is a pilot study with the purpose of further refining the survey

instrument as well as other aspects of the study protocols, benefit estimates are not expected to be used for policy evaluation purposes.

**17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.**

The expiration date for OMB approval will be displayed on each survey associated with this collection.

**18. Explain each exception to the topics of the certification statement identified in "Certification for Paperwork Reduction Act Submissions."**

There are no exceptions to the certification statement.

---

**REFERENCES**

Balson, William E., Richard T. Carson, Michael B. Conaway, Baruch Fischhoff, W. Michael Hanemann, Annette Hulse, Raymond J. Kopp, Kerry M. Martin, Robert C. Mitchell, John Molenaar, Stanley Presser, and Paul A. Ruud. 1990. "Development and Design of a Contingent Value Survey for Measuring the Public's Value for Visibility Improvements at the Grand Canyon National Park." Revised Draft Report. Prepared by Decision Focus Incorporated for the Salt River Project.

Balson, William E., Richard T. Carson, and Robert C. Mitchell. 1991. *The Grand Canyon Visibility Benefits Study*. Paper presented at the 84th Annual Meeting & Exhibition of the Air and Waste Management Association. June.

Brookshire, David S., Ralph C. d'Arge, William D. Schulze and Mark A. Thayer. 1979. *Methods Development for Assessing Tradeoffs in Environmental Management, Vol. II: Experiments in Valuing Non-Market Goods: A Case Study of Alternative Benefit Measures of Air Pollution Control in the South Coast Air Basin of Southern California*. Prepared for the U.S. Environmental Protection Agency, Office of Research and Development.

Carson, R.T., Robert Cameron Mitchell, and Paul A. Ruud. 1990. "Valuing air quality improvements: Simulating a Hedonic Pricing Equation in the context of a contingent valuation scenario." In (C.V. Mathai, editor) *Visibility and Fine Particulates*. AWMA. Pittsburgh, PA.



Chestnut, Lauraine G. and Robert D. Rowe. 1990a. *Preservation Values for Visibility Protection at the National Parks*. Prepared for U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, and National Park Service, Air Quality Management Division.

Crocker, Thomas and Jason Shogren. 1991. "Ex Ante Valuation of Atmospheric Visibility." *Applied Economics* 23: 143-151.

Holmes, T. and W. Adamowicz, Chapter 6: Attribute-Based Stated Preference Methods, in *A Primer on Nonmarket Valuation*, P. Champ, K. Boyle and T. Brown, eds., Kluwer, 2003.

Leggett, C., K. Boyle, R. Carson and R. Unsworth, *Valuing Visibility in National Parks: An Overview of the Challenges*, Final Report, Prepared for NPS Air Resources Division, July, 2004.

Loehman, Edna T., David Boldt and Kathleen Chaikin. 1984. *Measuring the Benefits of Air Quality Changes in the San Francisco Bay Area*. Prepared for U.S. Environmental Protection Agency, Office of Policy, Planning and Evaluation. October.

Louviere, J., D. Hensher and S. Swait, *Stated Choice Methods*, Cambridge University Press, 2000

Meldrum, B., S. Hollenhorst, L. Le and M. Manni, *Clean Air in the National Parks: A Report on Visitor Perceptions and Values*, NPS Social Science Program, Draft, March, 2006.

McClelland, Gary, William Schulze, Donald Waldman, Julie Irwin, David Schenk, Thomas Stewart, Leland Deck and Mark Thayer. 1993. *Valuing Eastern Visibility: A Field Test of the Contingent Valuation Method*. Prepared for U.S. Environmental Protection Agency, Office of Policy, Planning and Evaluation.

Mitchell, Robert Cameron, Richard T. Carson, and Paul A. Ruud. 1989. *Cincinnati Visibility Valuation Study: Pilot Study Findings*. Prepared for the Electric Power Research Institute. October.

Rae, Douglas A. 1981a. *Benefits of Improving Visibility at Mesa Verde National Park*. Draft report prepared for Electric Power Research Institute by Charles River Associates, Incorporated.

Rae, Douglas A. 1981b. *Benefits of Improving Visibility at Great Smoky National Park*. Draft report prepared for Electric Power Research Institute by Charles River Associates, Incorporated.

Rae, Douglas A. 1983a. *Benefits of Visual Air Quality in Cincinnati Results of a Contingent Ranking Survey*. Prepared for Electric Power Research Institute. May.

Rae, Douglas A. 1983b. "The Value to Visitors of Improving Visibility at Mesa Verde and Great Smoky National Parks." In R.D. Rowe and L.E. Chestnut (editors) *Managing Air Quality and Scenic Resources at National Parks and Wilderness Areas*. Westview Press. Boulder, CO.

Rathbun, P.R. and R.M. Baumgartner. 1996. "Prepaid Monetary Incentives and Mail Survey Response Rates." Paper presented at the 1996 Joint Statistical Meetings. Chicago, Illinois. June.

Rowe, Robert D., Ralph C. d'Arge and David S. Brookshire. 1980. "An Experiment on the Economic Value of Visibility," *Journal of Environmental Economics and Management* 7:1-19.

Schulze, William D., David S. Brookshire, Eric G. Walther, Karen Kelley MacFarland, Mark A. Thayer, Regan L. Whitworth, Shaul Ben-David, William Malm and John Molenaar. 1983. "The Economic Benefits of Preserving Visibility in the National Parklands of the Southwest," *Natural Resources Journal* 23:149-173.

Stevens, Thomas H., John M. Halstead, Wendy Harper, Ina Porras, L. Bruce Hill, Theresa L. Walker, and Cleve Willis. 2000. *The Value of Visibility: A Comparison of Stated Preference Methods*. Paper prepared for presentation at U.S. Environmental Protection Agency. Washington, D.C. October 12-13.

Tolley, George, Alan Randall, and Glen Blomquist. 1986. *Establishing and Valuing the Effects of Improved Visibility in Eastern United States*. Prepared for U.S. Environmental Protection Agency, Office of Policy, Planning and Evaluation.

U.S. EPA, Regulatory Impact Analysis for the Final Clean Air Visibility Rule or the Guidelines for Best Available Retrofit Technology (BART) Determinations Under the Regional Haze Regulations, EPA-452/R-05-004, June 2005.

Warriner, K., J. Goyder, H. Gjertsen, P. Hohner, and K. McSpurren. 1996. "Charities, No; Lotteries, No; Cash, Yes: Main Effects and Interactions in a Canadian Incentives Experiment." *Public Opinion Quarterly* 60 (4): 542-562.

