

SUPPORTING STATEMENT
Request to Conduct Focus Groups
§316(b) Benefits Survey
March 24, 2010

(1) Title of the Information Collection

Estimating the Social Benefits of §316(b) Requirements for Cooling Water Intake Structures under the National Pollutant Discharge Elimination System Permit Program

(2) Short Characterization/Abstract

On February 16, 2004, the U.S. Environmental Protection Agency (EPA) took final action on the Phase II rule governing cooling water intake structures at existing facilities that are point sources; that, as their primary activity, both generate and transmit electric power or generate electric power for sale to another entity for transmission; that use or propose to use cooling water intake structures with a total design intake flow of 50 MGD or more to withdraw cooling water from waters of the United States; and that use at least 25 percent of the withdrawn water exclusively for cooling purposes. See 69 FR 41576 (July 9, 2004). Industry and environmental stakeholders challenged the Phase II regulations. On judicial review, the Second Circuit (*Riverkeeper, Inc. v. EPA*, 475 F.3d 83, (2d Cir., 2007)) remanded several provisions of the Phase II rule. Some key provisions remanded are as follows: EPA improperly used a cost-benefit analysis as a criterion for determining Best Technology Available (BTA), and EPA inappropriately used ranges in setting performance expectations. In response, EPA suspended the Phase II regulation in July 2007 pending further rulemaking. The U.S. Supreme Court granted Entergy Corporation's petition for writ of certiorari, solely on the question of whether EPA had the authority under §316(b) of the Clean Water Act to consider costs and benefits in decision-making. On April 1, 2009, the Court, in *Entergy Corp. v. Riverkeeper Inc.*, decided that "EPA permissibly relied on cost-benefit analysis in setting the national performance standards ... as part of the Phase II regulations." EPA is now taking a voluntary remand of the rule, thus ending Second Circuit review.

In June of 2006, EPA promulgated the 316(b) Phase III Rule for existing manufacturers, small flow power plants (facilities that use cooling water intake structures with a total design intake flow of less than 50 MGD to withdraw cooling water from waters of the United States; and that use at least 25 percent of the withdrawn water exclusively for cooling purposes), and new offshore oil and gas facilities. Offshore oil and gas firms and environmental groups petitioned for judicial review, which was to occur in the Fifth Circuit, but was stayed pending the Supreme Court decision on the Phase II case. EPA is also voluntarily remanding the existing facilities portion of the Phase III rulemaking.

EPA is now combining the two phases (Phase II and III) into one rulemaking covering all existing facilities. EPA will develop regulations to provide national performance

standards for controlling impacts from Phase II and Phase III cooling water intake structures under Section 316(b) of the Clean Water Act (CWA).

Under Executive Order 12866, EPA is required to estimate the potential benefits and costs to society. The purpose of this set of focus groups is to finish the development of a survey instrument that will be used to elicit values for changes in fish mortality and the associated ecological gains from a section 316(b) regulation covering Phase II and Phase III facilities.

The survey will be used to estimate total (use plus nonuse) values (willingness to pay, or WTP) derived by average households for changes related to the reduction of fish losses at CWIS. As indicated in the prior literature (Cummings and Harrison 1995; Johnston et al. 2003, 2005), it is virtually impossible to justify, theoretically, the decomposition of empirical estimates of use and nonuse values. The survey will provide the flexibility, however, to estimate *nonuser* values, using various nonuser definitions drawn from responses to survey questions 11 to 13. The structure of choice attribute questions will also allow the analysis to separate value components related to the most common sources of use values—effect on harvested recreational and commercial fish. The remaining welfare estimates are expected to be composed primarily of nonuse components, although some use value components might also be included for some respondents. In summary, the survey will provide estimates of total use plus nonuse values, will allow estimates of value associated with specific choice attributes (following standard methods for choice experiments), and will also allow the flexibility to provide some insight into the relative importance of use versus nonuse values in the 316(b) context.

Within rulemaking, among the most crucial concerns is the avoidance of benefit (or cost) double counting. Here, for example, the WTP estimates will include use and nonuse values among a representative population sample. These will overlap—to a potentially substantial extent—with use value estimates that might be provided through some other methods, including revealed preference methods that might be used to estimate use values of recreational anglers for fish kill reductions (i.e., through related improvements in fishing quality). While using the proposed stated preference value estimates for benefit estimation, particular care will be given to avoid any possible double counting of values that might be derived from alternative valuation methods. In doing so, the Office of Water will rely upon standard theoretical tools for non-market welfare analysis, as presented by authors including Freeman (2003) and Just et al. (2004). From a purely mechanistic perspective, survey results will be used to derive use and nonuse values following standard practice for choice experiments (Adamowicz et al. 1998).

This supporting statement addresses the testing of a draft survey instrument.

(3) Need for the Collection

The project is being undertaken pursuant to section 104 of the Clean Water Act dealing with research. Section 104 of the Clean Water Act authorizes and directs the EPA administrator to conduct research into a number of subject areas related to water quality,

water pollution, and water pollution prevention and abatement. This section also authorizes the EPA administrator to conduct research into methods of analyzing the costs and benefits of programs carried out under the Clean Water Act.

This project is exploring how public values for fishery resources (covering both use and non-use values) are affected by fish losses from impingement and entrainment at cooling water intake structures (CWIS). Understanding total public values, including the more difficult to estimate non-use values, for fishery resources is necessary to determine the full range of benefits associated with reductions in impingement and entrainment losses, and whether the benefits of government action to reduce impingement and entrainment losses at Phase II and Phase III facilities are commensurate with the costs associated with such actions. Because non-use values may be substantial, failure to recognize such values may lead to improper inferences regarding policy benefits and costs. The findings from this study will primarily be used by EPA to improve estimates of the economic benefits of the section 316(b) regulation for Phases II and III facilities as required under Executive Order 12866.

(4) Non-duplication

EPA has not identified any previous studies that would allow direct estimation of the social benefits of quantified nationwide changes in populations of fish species (including forage, recreational, and commercial species) affected by the proposed 316(b) regulation. Therefore, to the best of our knowledge this survey is unique and does not duplicate other efforts.

There are many studies in the environmental economics literature that quantify benefits or willingness to pay (WTP) associated with various types of water quality and aquatic habitat changes. However, none of these studies allows the isolation of non-market WTP associated with quantified reductions in fish losses (or increases in fish populations) for forage fish. Most available studies estimate WTP for broader, and sometimes ambiguously defined, policies that simultaneously influence many different aspects of aquatic environmental quality and ecosystem services, but for which WTP associated with fish or aquatic life alone cannot be identified. Other studies provide benefit estimates associated with improvements in fish (or aquatic) habitat, but do not link this to well-defined and quantified changes in affected or supported organisms. Still other studies address willingness to pay for changes in charismatic or recreational species that have little relationship to the types of forage fish that are the main species affected by cooling water intake structures.

For example, choice experiment studies such as Hanley et al. (2006a, b) and Morrison and Bennett (2004) estimate WTP for aquatic ecosystem changes that affect fish, but effects on fish are quantified and valued solely in terms of the presence/absence of different types of fish species. This approach renders associated results unsuitable for 316(b) benefit estimation. Also, many of these studies were conducted outside the U.S. (e.g., the EU or Australia), making their use for benefit transfer to a U.S. policy context much more challenging.

Other studies have estimated the value of changes in catch rates or populations of select recreational and commercial species, charismatic species such as salmon, or changes in water quality that affect fish, but none have specifically valued changes in forage fish populations. For example, Olsen et al. (1991) conducted a survey of Pacific Northwest residents, including both anglers and non-anglers, to determine their WTP for doubling the size of the Columbia River Basin salmon and steelhead runs. EPA's proposed survey approach differs from this study and others like it (such as Cameron and Huppert, 1989) in that it would include respondents from various geographic regions in the United States and would provide values for the full range of forage, recreational, and commercial species affected by 316(b) regulations, instead of valuing a few recreational species in one specific geographical area.

Among available studies, the most closely related is Johnston et al. (2009), which estimates total willingness to pay (WTP) for multi-attribute aquatic ecosystem changes related to improvements in small migratory (diadromous) fish. Unlike other studies, the choice experiment data of Johnston et al. (2009) allow estimation of WTP associated with quantified changes in forage fish (e.g., WTP per fish or percentage change in fish), holding other ecological effects constant. That is, unlike results provided by other studies in the literature, WTP estimates of Johnston et al. (2009) are not confounded with values for other changes including water quality, habitat, overall ecological condition, etc. In addition, the choice experiment of Johnston et al. (2009) addresses species such as alewife and blueback herring that are neither subject to recreational or commercial harvest in Rhode Island, nor are charismatic species. Hence, the species affected are a close analog to the forage fish that are at primary issue in the 316(b) policy context.

Although the methods and data of Johnston et al. (2009) allow quantification of combined use and nonuse values associated with specific improvements in forage and/or recreational fish, and also provide limited ability to isolate nonuse values from use values, the policy context and scale prevent direct use for analysis of national benefits of the 316(b) regulation. Specifically, Johnston et al. (2009) estimate Rhode Island residents' preferences for the restoration of migratory fish passage over dams in the Pawtuxet and Wood-Pawcatuck watersheds. Hence, the case study is for a watershed-level policy with statewide welfare implications. In contrast, 316(b) policies would have nationwide implications, both on ecosystems and on affected facilities.

(5) Consultations

The Principal Investigator for the stated-preference portion of this effort is Dr. Robert Johnston. Dr. Johnston is assisted by Dr. Elena Besedin, a Senior Economist at Abt Associates Inc. Dr. Erik Helm at the U.S. Environmental Protection Agency serves as the project manager and a contributor to this research.

Robert J. Johnston is Director of the George Perkins Marsh Institute and Professor of Economics at Clark University. He is President-elect of the Northeastern Agricultural and Resource Economics Association (NAREA), on the Program Committee for the

Charles Darwin Foundation, the Science Advisory Board for the Communication Partnership for Science and the Sea (COMPASS), and is the Vice President of the Marine Resource Economics Foundation. Professor Johnston has published extensively on the valuation of non-market commodities (goods, services, and resources), benefit cost analysis, and resource management. His recent research emphasizes coordination of ecological and economic models to estimate ecosystem service values, with particular emphasis on the role of aquatic ecological indicators. He has also worked extensively in methodologies for benefit transfer, including the use of meta-analysis. Professor Johnston's empirical work on non-market valuation and benefit transfer has contributed to numerous benefit cost analyses conducted by federal, state and local government agencies in the US, Canada and elsewhere.

Elena Y. Besedin, a senior economist at Abt Associates Inc., specializes in the economic analysis of environmental policy and regulatory programs. Her work for EPA has concentrated on analyzing economic benefits from reducing risks to the environment and human health and assessing environmental impacts of regulatory programs for many EPA program offices. She worked extensively on valuation of non-market benefits associated with environmental improvements of aquatic resources. Dr. Besedin's empirical work on non-market valuation included design and implementation of stated and revealed preference studies and benefit transfer methodologies. Her recent work focused on developing integrated frameworks to value changes in ecosystem services stemming from environmental regulations.

EPA has conducted an external peer review of the previous version of the survey instrument. The previous version of the survey instrument was reviewed by Dr. Richard C. Bishop, Dr. Kevin J. Boyle, Dr. Timothy C. Haab, Dr. James R. Kahn, and Dr. Alan J. Krupnick. The review focused on (1) the appropriateness of the survey design for measuring fish resources affected by cooling water intake structures (CWIS), (2) sufficiency and appropriateness of information provided in the survey on the baseline ecological conditions, the expected changes, and the expected costs, and (3) whether the answers to this survey lend themselves to straightforward economic interpretation of WTP. The reviewers acknowledged the extensive effort that was placed into survey design and noted that the 316(b) survey was a well-designed study. They also offered concrete suggestions for further improvements of the survey instrument. EPA has incorporated many of the reviewers comments in subsequent survey revisions (Versar 2006).

(6) Peer Review Plans

Internal Agency reviewers provided and will continue to provide input on the content and format of the focus groups, questionnaire design issues, and issues related to survey sampling design and methodology. Survey materials will be subject to routine internal review by Dr. Helm and EPA's National Center for Environmental Economics (NCEE) staff.

We note that the current survey instrument is built upon an earlier version that was peer reviewed in January 2006. It incorporates recommendations received from the first peer review panel. Because the final product of this study meets the major technical work criteria specified in the Peer Review Handbook (U.S. EPA 2000) the Agency also plans to convene a peer-review panel to review the entire survey process, including the survey instrument, study results, and EPA's final estimated results for the 316(b) Existing Facilities rulemaking, after the survey is completed.

(7) Confidentiality

The survey instrument will fully conform to federal regulations – specifically the Privacy Act of 1974 (5 U.S.C. 552a), the Hawkins-Stafford Amendments of 1988 (P.L 100-297), and the Computer Security Act of 1987. Each prospective respondent will be informed that their participation in the survey is voluntary, and that their identities will be kept confidential by the investigators and not associated with their responses. Neither EPA nor any other federal or state agency will have access to the names of respondents.

The focus groups will be recorded using audiotapes, which will later be transcribed. However, individuals will not be identified on the transcripts. To insure that the focus groups include a representative and diverse sample of individuals, EPA will tabulate basic demographic information for participants, such as age, ethnicity, occupation, and income. However, no personal identifying information about participants, such as names, phone numbers, or addresses, will be included in the focus group transcripts. Prior to commencing any audio recordings, respondents would be informed of EPA's intentions to audiotape the focus group proceedings, and informed that all taped responses will be strictly anonymous and confidential.

(8) Sensitive Questions

There are no questions on sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private or sensitive in these focus group materials. Answers to standard demographic questions (i.e., age, income) will be included.

(9) Respondents

EPA intends to conduct eight focus groups as part of the testing of the survey instrument. There are a total of seven study regions for purposes of evaluating the 316(b) benefits. For the purpose of the stated preference survey implementation, EPA uses five geographic regions: California, Great Lakes, Inland, Northeast, and Southeast. The Northeast region includes the North Atlantic and Mid Atlantic regions and the Southeast region includes the South Atlantic and Gulf of Mexico regions. Because focus groups in different study regions might provide distinct information relevant to survey design the Agency will conduct focus groups in multiple regions.

Each focus group will last approximately 90 minutes. We anticipate that eight to ten people will attend each focus group. For each focus group, individuals will be recruited

from one of the study regions to reflect the range of ultimate potential respondents to a survey. The groups will be led by an experienced moderator, and held in facilities with audio/video recording capabilities.

Focus group participants will be randomly selected by marketing research firms from panels of focus group participants maintained by each firm. Participants are eligible if they are 18 years of age or older; if they are not full-time students; if they do not have occupations related to the environment, including water treatment and sewage, electric or nuclear power companies; and if they have not participated in a survey or focus group in the last six months. Each of the focus groups will include a mix of individuals with diverse socioeconomic backgrounds, based on characteristics such as income, marital status, age, race, education, occupation, and gender. Participants will be asked to attend a focus group session and participate in a discussion of specific topics led by a moderator. Participation in the focus group sessions is voluntary. Participants will have to expend time, effort, and travel to participate in the focus group sessions. Following standard practice in marketing research, participants will be compensated for their time and effort. As described by Dillman (2000) in the context of population surveys, compensation can increase response rates and provide an incentive to participate among respondents who may not have a strong ex ante interest in the subject matter. Therefore, compensation can help to avoid self selection biases associated with ex ante interests in environmental policies, and can thereby encourage a more representative sample of focus group participants. The proposed incentive fee is \$75.00 per participant.

(10) Collection Schedule

The proposed timeline for the data collection is as follows.

Task:	Date:
Submit ICR package for focus groups to OMB	March 2010
Conduct focus groups	April-May 2010
Finalize draft survey instrument	April 2010
Submit ICR package to OMB	May 2010
Receive approval to conduct survey	June 2010
Field survey to sample	September 2010
Allow 8-10 weeks for data collection	
Analyze data	November - December 2010
Prepare final report and papers	January - February 2011
Internal EPA peer review of survey methodology and results	TBD

(11) Respondent Burden

For each of the eight groups we will recruit ten participants. Participants will be given directions to a marketing research firm where the focus group will occur. They will be provided a light snack and beverages as well as \$75 compensation for their time. We

anticipate that there will be some attrition between recruiting and the actual time of the focus group, so we anticipate eight to nine participants in each session.

For the purposes of calculating burden, the maximum total number of respondents is **80**. Each individual will participate in a 90 minute session. We also anticipate that individuals will spend up to 30 minutes of travel time. Therefore, the total number of respondent hours requested is **160 hours**.

(12) Information Requested

Individuals who attend the focus groups will at some point during the session be asked to review the draft survey, answer draft survey questions, and provide feedback on these presentation materials and survey questions. After reviewing introductory materials and administering draft survey questions, the moderator of the focus group will read and ask participants debriefing questions. A script containing relevant questions that will be used to guide the discussion is attached to this request. EPA notes that the exact wording of debriefing questions in focus groups may be adjusted somewhat by focus group moderators to conform to the flow of ongoing discussion. Survey materials will be revised between groups based on respondent reactions and comments to ensure that the draft instrument used in each focus group is as clear, concise, and comprehensive as possible.

EPA notes that not all discussion topics or questions presented in the attached script can be covered in any single focus group session, due to time constraints. Instead, these questions will be covered over a number of different focus groups. In some focus groups, the moderator will first offer some draft valuation questions to focus group participants, as noted above, followed by debriefing questions. In other cases, the focus group may begin with general discussion questions, prior to the consideration of draft survey questions. The order of questions either within or between the categories above may also be altered, as appropriate to the flow of discussion within a particular focus group. Freedom to alter question order is important, as it is often impossible to predict the direction in which respondents will direct their discussions and/or answers.

Some of the focus groups will incorporate individual one-on-one protocol interviews of the survey instrument. One-on-one protocol interviews will allow in-depth exploration of the cognitive processes used by respondents to answer survey questions, without the potential for interpersonal dynamics to sway respondents' comments (Kaplrowicz et al. 2004).

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