



**J O I N T   C E N T E R**  
AEI-BROOKINGS JOINT CENTER FOR REGULATORY STUDIES

**National Ambient Air Quality Standards (NAAQS) Brief**

**Kenneth J. Arrow, Elizabeth E. Bailey, William J. Baumol, Jagdish Bhagwati, Michael J. Boskin, David F. Bradford, Robert W. Crandall, Maureen L. Cropper, Christopher DeMuth, George C. Eads, Milton Friedman, John D. Graham, Wendy L. Gramm, Robert W. Hahn, Paul L. Joskow, Alfred E. Kahn, Paul R. Krugman, Lester B. Lave, Robert E. Litan, Randall Lutter, Paul W. MacAvoy, Paul W. McCracken, James C. Miller III, William A. Niskanen, William D. Nordhaus, Wallace E. Oates, Peter Passell, Sam Peltzman, Paul R. Portney, Alice M. Rivlin, Milton Russell, Richard L. Schmalensee, Charles L. Schultze, V. Kerry Smith, Robert M. Solow, Robert N. Stavins, Joseph E. Stiglitz, Laura D'Andrea Tyson, W. Kip Viscusi, Murray L. Weidenbaum, Janet L. Yellen, Richard J. Zeckhauser.**

**Brief 00-01  
July 2000**

No. 99-1426

---

IN THE

SUPREME COURT OF THE  
UNITED STATES

---

AMERICAN TRUCKING ASSOCIATIONS, INC., *ET AL.*,  
*Cross-Petitioners*,

v.

CAROL M. BROWNER, ADMINISTRATOR OF THE  
ENVIRONMENTAL PROTECTION AGENCY, *ET AL.*,  
*Cross-Respondents*.

---

ON WRIT OF *CERTIORARI*  
TO THE UNITED STATES COURT OF APPEALS  
FOR THE DISTRICT OF COLUMBIA CIRCUIT

BRIEF *AMICI CURIAE* OF AEI-BROOKINGS JOINT CENTER FOR  
REGULATORY STUDIES, KENNETH J. ARROW,  
ELIZABETH E. BAILEY, WILLIAM J. BAUMOL,  
JAGDISH BHAGWATI, MICHAEL J. BOSKIN,  
DAVID F. BRADFORD, ROBERT W. CRANDALL,  
MAUREEN L. CROPPER, CHRISTOPHER C. DEMUTH,  
GEORGE C. EADS, MILTON FRIEDMAN, JOHN D. GRAHAM,  
WENDY L. GRAMM, ROBERT W. HAHN, PAUL L. JOSKOW,  
ALFRED E. KAHN, PAUL R. KRUGMAN, LESTER B. LAVE,  
ROBERT E. LITAN, RANDALL W. LUTTER, PAUL W. MACAVOY,  
PAUL W. MCCRACKEN, JAMES C. MILLER III,  
WILLIAM A. NISKANEN, WILLIAM D. NORDHAUS,  
WALLACE E. OATES, PETER PASELL, SAM PELTMAN,  
PAUL R. PORTNEY, ALICE M. RIVLIN, MILTON RUSSELL,  
RICHARD L. SCHMALENSEE, CHARLES L. SCHULTZE,  
V. KERRY SMITH, ROBERT M. SOLOW, ROBERT N. STAVINS,  
JOSEPH E. STIGLITZ, LAURA D'ANDREA TYSON,  
W. KIP VISCUSI, MURRAY L. WEIDENBAUM, JANET L. YELLEN,  
AND RICHARD J. ZECKHAUSER IN SUPPORT OF  
CROSS-PETITIONERS

---

ROBERT E. LITAN  
*Counsel of Record*  
AEI-BROOKINGS JOINT CENTER  
FOR REGULATORY STUDIES  
1150 17<sup>th</sup> St., N.W.  
Washington, D.C. 20036  
(202) 797-6120

---

July 21, 2000

## TABLE OF CONTENTS

INTEREST OF <i>AMICI CURIAE</i> .....	1
BACKGROUND .....	3
A. Procedural History .....	3
B. Nature and Importance of Benefit-Cost Analysis .....	4
C. Evolution of the Use of Benefit-Cost Analysis in Regulatory Decisionmaking .....	5
SUMMARY OF ARGUMENT .....	7
ARGUMENT .....	7
I. A GROUP OF ECONOMISTS DEVELOPS A CONSENSUS ON THE USE OF BENEFIT-COST ANALYSIS FOR ENVIRONMENTAL REGULATION .....	9
II. IF AT ALL POSSIBLE GIVEN THE RELEVANT LEGAL AUTHORITIES, THE COURT SHOULD HOLD THAT SECTION 109(B) ALLOWS CONSIDERATION OF BOTH BENEFITS AND AND COSTS WHEN SETTING NAAQS.....	11
CONCLUSION .....	12
LIST OF <i>AMICI CURIAE</i> .....	13

## TABLE OF AUTHORITIES

### Cases:

*Lead Indus. Ass'n v. EPA*,  
499 U.S. 1042 (D.C. Cir. 1980) ..... 3

*State of Michigan v. EPA*,  
2000 WL 180650 (D.C. Cir. 2000) ..... 6

### Statutes:

42 U.S.C. § 7409(b)(1) ..... 7, 8, 11

62 FED. REG. 38,856 (July 18, 1997) ..... 11

Executive Order 12291,  
46 FED. REG. 13,193 (Feb. 17, 1981) ..... 5, 6

Executive Order 12866,  
58 FED. REG. 51,735 (Oct. 4, 1993) ..... 2, 5, 6, 11, 12

Small Business Regulatory Enforcement Fairness Act of  
1996, Pub. L. No. 104-121, 110 Stat. 857 (Codified in 15  
U. S. C. § 601 *et seq.*) ..... 6

Unfunded Mandates Reform Act of 1995, Pub. L. No. 104-4,  
109 Stat. 48 (Codified in 2 U. S. C. § 1535) ..... 6

**Miscellaneous:**

KENNETH J. ARROW, MAUREEN L. CROPPER, GEORGE C. EADS, ROBERT W. HAHN, LESTER B. LAVE, ROGER G. NOLL, PAUL R. PORTNEY, MILTON RUSSELL, RICHARD L. SCHMALENSSEE, V. KERRY SMITH, AND ROBERT N. STAVINS, BENEFIT-COST ANALYSIS IN ENVIRONMENTAL, HEALTH, AND SAFETY REGULATION: A STATEMENT OF PRINCIPLES (1996) . . . . .	4, 9
ROBERT W. CRANDALL, CHRISTOPHER DEMUTH, ROBERT W. HAHN, ROBERT E. LITAN, PIETRO S. NIVOLA, AND PAUL R. PORTNEY, AN AGENDA FOR FEDERAL REGULATORY REFORM (1997) . . . . .	4
ROBERT H. FRANK AND CASS R. SUNSTEIN, COST-BENEFIT ANALYSIS AND RELATIVE POSITION (2000) . . . . .	7
Richard H. Pildes and Cass R. Sunstein, <i>Reinventing the Regulatory State</i> , 62 U. CHI. L. REV. 1 (1995) . . . . .	5
Tammy O. Tengs and John D. Graham, <i>The Opportunity Costs of Haphazard Social Investments in Life-saving, in RISKS, COSTS, AND LIVES SAVED: GETTING BETTER RESULTS FROM REGULATION</i> (Robert W. Hahn ed. 1996) . . . . .	2

## INTEREST OF *AMICI CURIAE*

This brief is being submitted on behalf of a group of economists.<sup>1</sup> The purpose of the brief is not to attempt to guide the Court on legal issues but to inform it on economic ones. To put ourselves in the best possible position to offer the Court our expertise, we have tried to understand, in light of the legal task confronting the Court, where our own economic expertise might have a useful role to play.

To that end, we understand that the lawyers who brought this case framed the following question for the Court's consideration: "Whether the Clean Air Act requires that the Environmental Protection Agency ignore all factors 'other than health effects relating to pollutants in the air'" when setting National Ambient Air Quality Standards (NAAQS). We also understand that this question has arisen in part because the United States Court of Appeals in Washington, D.C., whose responsibility it is to review air quality standards issued by the Environmental Protection Agency (EPA), has interpreted the Clean Air Act as barring the EPA from even considering the potential costs of its air quality regulations.

The merits of this legal debate between the D.C. Circuit and the counsel who have contested the D.C. Circuit's views are beyond the scope of our economic expertise and hence of this brief. Nonetheless, we respectfully offer the following observations with hopes that they may ultimately prove useful.

The importance of this issue cannot be overstated. Both the direct benefits and costs of environmental, health, and safety regulations are substantial—estimated to be several hundred

---

<sup>1</sup> No counsel for any party to this case authored this brief in whole or in part; and no person other than the *amici*, their members, or their counsel made a monetary contribution to the preparation or submission of this brief. The signatories express their appreciation for the assistance of Jason K. Burnett and Erin M. Layburn, both of the AEI-Brookings Joint Center for Regulatory Studies, with the preparation of this brief.

billion dollars annually. If these resources were better allocated with the objective of reducing human health risk, scholars have predicted that tens of thousands more lives could be saved each year.<sup>2</sup> All presidents since Nixon—both Democratic and Republican—have attempted to make environmental, health, and safety regulations more efficient by requiring some form of oversight attempting to balance benefits and costs. President Reagan and President Clinton each crafted an executive order that required an explicit balancing of benefits and costs for major regulations to the extent permitted by law. A comprehensive regulatory impact analysis (RIA) prepared in conformance with President Clinton’s Executive Order 12866 was done for the ozone and particulate matter rulemaking, but it played no official or overt part in the decision in this case because of the D.C. Circuit’s view that costs must not be considered.

The issue presented in this case is of great significance to *amici curiae*. In 1998, the American Enterprise Institute (AEI) and the Brookings Institution established the AEI-Brookings Joint Center for Regulatory Studies (Joint Center) to help improve regulation and the regulatory process. A principal focus of the Joint Center is to analyze the economic benefits and costs of regulations, such as the ones being considered here, and to explore the implications of court decisions involving regulation. The Joint Center and the economists submitting this brief have a substantial interest in seeing that the Court

---

<sup>2</sup> See Tammy O. Tengs and John D. Graham, *The Opportunity Costs of Haphazard Social Investments in Life-Saving*, in RISKS, COSTS, AND LIVES SAVED: GETTING BETTER RESULTS FROM REGULATION (Robert W. Hahn ed. 1996). (The authors, from the Harvard School of Public Health, calculated that improved priority setting across federal agencies could provide either savings of \$31.1 billion from current cost levels with no additional loss of life or savings of 60,200 lives at current cost levels.)

interprets the Clean Air Act in a manner that encourages sound decisions and in a way that is consistent with the law as established by Congress.

To that end the Joint Center asked the economists who are signatories to this brief to identify principles that are appropriate for setting National Ambient Air Quality Standards as well as for making other important regulatory decisions. The Joint Center and these economists are accordingly submitting this brief in the interest of improving regulatory decisionmaking as well as making it more transparent. All parties have consented to the filing of this brief.

## **BACKGROUND**

### **A. Procedural History**

In 1996, the EPA initiated rulemakings to revise the National Ambient Air Quality Standards for ozone and particulate matter (PM). The EPA prepared an RIA that suggested that the costs of the ozone standards would exceed the benefits while the benefits of the particulate matter standards would exceed the costs. The Joint Center strongly favors using such RIAs in decisionmaking and, without endorsing the quality of all aspects of the RIA here, believes that the ozone and PM RIA should have been considered in setting the standards. The D.C. Circuit ruled, however, that *Lead Industries* barred any consideration of costs and hence was unwilling to consider whether a balancing of benefits and costs might provide the requisite “intelligible principle” needed to resolve the constitutional problems that it found with EPA’s interpretation of the statute.<sup>3</sup>

---

<sup>3</sup> See *Lead Indus. Ass’n v. EPA*, 499 U.S. 1042 (D.C. Cir. 1980).

## **B. Nature and Importance of Benefit-Cost Analysis**

The concern of the Joint Center along with that of the other signatories is how analytical methods, such as benefit-cost analysis, should be used in regulatory decisionmaking.<sup>4</sup> These methods can help promote the design of better regulations by providing a sensible framework for comparing the alternatives involved in any regulatory choice. Such analysis improves the chances that regulations will be designed to achieve a particular social goal specified by legislators at a lower cost.<sup>5</sup> In addition, they can make the regulatory process more transparent by providing an analytical basis for a decision. Greater transparency in the process, in turn, will help hold regulators and lawmakers more accountable for their decisions.

These analytical methods are neither anti- nor proregulation; they can suggest reasons why it would be desirable to have tighter or more lenient standards depending on the results of an analysis. For example, the benefit-cost analyses in the RIA on particulate matter and ozone could be interpreted as suggesting that the ozone standard should not be lowered while a new PM standard for fine particles should be introduced to protect public health.

---

<sup>4</sup> See KENNETH J. ARROW, MAUREEN L. CROPPER, GEORGE C. EADS, ROBERT W. HAHN, LESTER B. LAVE, ROGER G. NOLL, PAUL R. PORTNEY, MILTON RUSSELL, RICHARD L. SCHMALENSEE, V. KERRY SMITH, AND ROBERT N. STAVINS, BENEFIT-COST ANALYSIS IN ENVIRONMENTAL, HEALTH, AND SAFETY REGULATION: A STATEMENT OF PRINCIPLES (1996) (“Arrow *et al.*”); see also ROBERT W. CRANDALL, CHRISTOPHER DEMUTH, ROBERT W. HAHN, ROBERT E. LITAN, PIETRO S. NIVOLA, AND PAUL R. PORTNEY, AN AGENDA FOR FEDERAL REGULATORY REFORM (1997).

<sup>5</sup> See ARROW *et al.*

### **C. Evolution of the Use of Benefit-Cost Analysis in Regulatory Decisionmaking**

Over the past two decades, support has been growing for the proposition that weighing of benefits and costs should play a more central role in regulatory decisionmaking. All three branches of government have recognized the importance of considering benefits and costs in designing regulation.<sup>6</sup>

To address the increase in regulatory activity over the past three decades, the past five presidents and President Clinton have introduced different analytical requirements and oversight mechanisms with varying degrees of success. A central component of later oversight mechanisms was formal economic analysis, which included benefit-cost analysis and cost-effectiveness analysis. Since 1981, presidents have required the preparation of RIAs for a predefined class of significant regulations.<sup>7</sup> President Reagan's Executive Order 12291 required an RIA for each significant regulation whose annual impact on the economy was estimated to exceed \$100 million. President Bush used the same executive order. President Clinton's and President Reagan's executive orders require a benefit-cost analysis for significant regulations as well as an

---

<sup>6</sup> See, e.g., Richard H. Pildes and Cass R. Sunstein, *Reinventing the Regulatory State*, 62 U. CHI. L. REV. 1, 8–11 (1995).

<sup>7</sup> While the definition of a “significant” regulation has changed somewhat over time, it is generally a regulation that is expected to have one or more of the following characteristics: an annual impact on the economy of \$100 million or more; a major increase in costs or prices for consumers or business; or significant effects on competition, employment, investment, productivity, or innovation. President Reagan's Executive Order 12291 described such regulations as “major,” while President Clinton's Executive Order 12866 described them as “significant.” We will use the term *significant* because it is used by the most recent executive order.

assessment of reasonably feasible alternatives to the planned regulation.<sup>8</sup>

Congress has also shown increasing interest in emphasizing the balancing of benefits and costs in regulatory decisions. The Small Business Regulatory Enforcement Fairness Act of 1996 requires agencies to submit final regulations to Congress for review.<sup>9</sup> The regulatory accountability provisions of 1996, 1997, and 1998 require the Office of Management and Budget to assess the benefits and costs of existing federal regulatory programs and to recommend programs or specific regulations to reform or eliminate. The Unfunded Mandates Reform Act of 1995 requires agencies, unless prohibited by law, to choose the most cost-effective regulatory approach or otherwise explain why they have not chosen this alternative.<sup>10</sup>

The courts have also been receptive to the use of benefit-cost analysis in decisionmaking. Indeed, the D.C. Circuit recently held in *State of Michigan v. EPA*, 2000 WL 180650, at \*12 (D.C. Cir. 2000), that “[i]t is only where there is ‘clear congressional intent to preclude consideration of cost’ that we find agencies barred from considering costs.” The court went on to cite various cases and legal authorities for the “general view

---

<sup>8</sup> The language in those two executive orders is very similar, suggesting bipartisan presidential support for benefit-cost analysis. *See* Executive Order 12291, 46 FED. REG. 13,193 (Feb. 17, 1981). “Regulatory action shall not be undertaken unless the potential benefits to society for the regulation outweigh the potential costs to society. . . . Regulatory objectives shall be chosen to maximize the net benefits to society.” *Id.* at § 2. *See also* Executive Order 12866, 58 FED. REG. 51,735 (Oct. 4, 1993). “In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives. . . . Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits . . . , unless a statute requires another approach.” *Id.* at § 1.

<sup>9</sup> 15 U. S. C. § 601 *et seq.*

<sup>10</sup> 2 U. S. C. § 1535.

that preclusion of cost consideration requires a rather specific congressional direction.” *Id.* This case and others led Professors Robert H. Frank and Cass R. Sunstein to conclude that “[f]ederal law now reflects a kind of default principle: Agencies will consider costs, and thus undertake cost-benefit analysis, if Congress has not unambiguously said that they cannot.”<sup>11</sup>

### **SUMMARY OF ARGUMENT**

As we understand it, the D.C. Circuit did not allow the EPA to consider the costs of complying with ozone and PM NAAQS. As we further understand it, this legal ruling can be overturned only by this Court. As economists, we believe that the D.C. Circuit’s ruling not allowing the EPA to consider important information relating to the consequences of its regulatory actions is economically unsound. Without delving into the legal aspects of the case, we present below why we think the Court should allow the EPA to consider costs in setting standards. In particular, we believe that, as a general principle, regulators should be allowed to consider explicitly the full consequences of their regulatory decisions. These consequences include the regulation’s benefits, costs, and any other relevant factors.

### **ARGUMENT**

We approach the question presented in this case from the perspective of the “default principle” summarized by Professors Frank and Sunstein.

Nothing in the following statutory text of section 109(b) of the Clean Air Act precludes consideration of costs:

National primary ambient air quality standards  
. . . shall be ambient air quality standards the

---

<sup>11</sup> ROBERT H. FRANK AND CASS R. SUNSTEIN, COST-BENEFIT ANALYSIS AND RELATIVE POSITION, (AEI-Brookings Joint Center for Regulatory Studies Working Paper 00-5, 2000), at 8.

attainment and maintenance of which in the judgment of the Administrator, based on such criteria and allowing a margin of safety, are requisite to protect the public health.<sup>12</sup>

Indeed, the plain aim of this provision is protecting the “public health,” and that aim is unlikely to be achieved without, at least, an implicit balancing of benefits and costs.

Benefit-cost analysis is simply a tool that can aid in making decisions. Most people do a kind of informal benefit-cost analysis when considering the personal pros and cons of their actions in everyday life—more for big decisions, like choosing a college or job or house, than for little ones, like driving to the grocery store. Where decisions, such as federal environmental regulations, are by their nature public rather than private, the government, as a faithful agent of its citizens, should do something similar.

Carefully considering the social benefits and social costs of a course of action makes good sense. Economists and other students of government policy have developed ways of making those comparisons systematic. Those techniques fall under the label benefit-cost analysis. Benefit-cost analysis does not provide *the* policy answer, but rather defines a useful framework for debate, either by a legislature or, where the legislature has delegated to a specialized agency the responsibility of pursuing a general good, by that agency.

---

<sup>12</sup> 42 U.S.C. § 7409(b)(1).

## **I. A GROUP OF ECONOMISTS DEVELOPS A CONSENSUS ON THE USE OF BENEFIT-COST ANALYSIS FOR ENVIRONMENTAL REGULATION.**

Economists, other policy experts, and the regulatory agencies themselves have produced a large literature on the methods and applications of benefit-cost analysis. There are, and always will be, many uncertainties and disagreements about those methods and their application in particular cases. Nevertheless, a wide consensus exists on certain fundamental matters. In 1996, a group of distinguished economists, including Nobel laureate Kenneth Arrow, were assembled to develop principles for benefit-cost analysis in environmental, health, and safety regulation.<sup>13</sup> Here, we summarize and paraphrase for the Court a number of principles that we think could be helpful in this case, which involves the review of the EPA's NAAQS standard-setting decisions.

**A benefit-cost analysis is a useful way of organizing a comparison of the favorable and unfavorable effects of proposed policies.** Benefit-cost analysis can help the decisionmaker better understand the implications of a decision. It should be used to inform decisionmakers. Benefit-cost analysis can provide useful estimates of the overall benefits and costs of proposed policies. It can also assess the impacts of proposed policies on consumers, workers, and owners of firms and can identify potential winners and losers.

In many cases, benefit-cost analysis cannot be used to prove that the economic benefits of a decision will exceed or fall short of the costs. Yet benefit-cost analysis should play an important role in informing the decisionmaking process, even when the information on benefits, costs, or both is highly uncertain, as is often the case with regulations involving the

---

<sup>13</sup> See ARROW *et al.*

environment, health, and safety.

**Economic analysis can be useful in designing regulatory strategies that achieve a desired goal at the lowest possible cost.** Too frequently, environmental, health, and safety regulation has used a one-size-fits-all or command-and-control approach. Economic analysis can highlight the extent to which cost savings can be achieved by using alternative, more flexible approaches that reward performance.

**Benefit-cost analysis should be required for all major regulatory decisions.** The scale of a benefit-cost analysis should depend on both the stakes involved and the likelihood that the resulting information will affect the ultimate decision.

**Agencies should not be bound by a strict benefit-cost test, but should be required to consider available benefit-cost analyses.** There may be factors other than economic benefits and costs that agencies will want to weigh in decisions, such as equity within and across generations.

**Not all impacts of a decision can be quantified or expressed in dollar terms. Care should be taken to ensure that quantitative factors do not dominate important qualitative factors in decisionmaking.** A common critique of benefit-cost analysis is that it does not emphasize factors that are not easily quantified or monetized. That critique has merit. There are two principal ways to address it: first, quantify as many factors as are reasonable and quantify or characterize the relevant uncertainties; and second, give due consideration to factors that defy quantification but are thought to be important.

**II. IF AT ALL POSSIBLE GIVEN THE RELEVANT  
LEGAL AUTHORITIES, THE COURT SHOULD  
HOLD THAT SECTION 109(B) ALLOWS  
CONSIDERATION OF BOTH BENEFITS AND  
COSTS WHEN SETTING NAAQS.**

We believe all of the available information should be considered in making any important decision. If costs or other types of data are deliberately left out, the quality of decisionmaking is likely to suffer. In particular, we make one recommendation, closely related to the Arrow *et al.* principles: The Court should allow the EPA to consider costs in setting NAAQS, so that these costs can then be assessed along with benefits and any other important information.

We believe that it would be imprudent for the EPA to ignore costs totally, particularly given their magnitude in this case. Together, the EPA estimates that those standards could cost on the order of \$50 billion annually. Not considering costs makes it difficult to set a defensible standard, especially when there is no threshold level below which health risks disappear. The EPA acknowledges that exposure to ozone presents a “continuum” of risk, as opposed to a threshold below which adverse health effects cease to occur.<sup>14</sup> If the EPA is required to set a standard “to protect the public health” with an “adequate margin of safety,” then ignoring costs could lead to a decision to set the standard at zero pollution.<sup>15</sup> That alternative, however, would be self-defeating—it would harm public health by threatening the very economic prosperity on which public health primarily depends.

Once the Court allows the EPA to consider costs, Executive Order 12866 will require the EPA to consider the full range of benefits and costs in setting NAAQS. We think that

---

<sup>14</sup> 62 FED. REG. 38,856, 38,863 (July 18, 1997).

<sup>15</sup> Clean Air Act § 109(b)(1), 42 U.S.C. § 7409(b)(1).

considering such information could improve both the regulatory decisionmaking process by making it more transparent and the regulatory decision by allowing all relevant information to be considered explicitly.

### **CONCLUSION**

We believe that this Supreme Court case involving the setting of National Ambient Air Quality Standards could be a historic moment in the making of regulatory policy. This brief has argued that it would be imprudent not to consider costs in the setting of standards. In accordance with Executive Order 12866, we also believe that the full range of benefits and costs should be considered in decisionmaking. Accordingly, this Court should allow the Environmental Protection Agency to consider costs in setting nationwide air quality standards, so that this information can be considered along with benefits and any other relevant factors in setting a standard.

Respectfully submitted,

Robert E. Litan  
*Counsel of Record*  
AEI-BROOKINGS  
JOINT CENTER FOR  
REGULATORY STUDIES  
1150 17<sup>th</sup> St., N.W.  
Washington, D.C. 20036  
(202) 797-6120

The *amici curiae* are:

AEI-Brookings Joint Center for Regulatory Studies

Kenneth J. Arrow  
Professor of Economics Emeritus, Stanford University  
Nobel Laureate in Economics

Elizabeth E. Bailey  
John C. Hower Professor of Public Policy, Wharton School,  
University of Pennsylvania  
Former Commissioner, Civil Aeronautics Board

William J. Baumol  
Professor of Economics Emeritus, Princeton University  
Director, C. V. Starr Center for Applied Economics, New York  
University

Jagdish Bhagwati  
Arthur Lehman Professor of Economics and Professor of Political  
Science, Columbia University  
Senior Fellow, Council on Foreign Relations

Michael J. Boskin  
T. M. Friedman Professor of Economics, Stanford University  
Former Chairman, President's Council of Economic Advisers

David F. Bradford  
Professor of Economics and Public Affairs, Princeton University  
Former Member, President's Council of Economic Advisers

Robert W. Crandall  
Senior Fellow, Brookings Institution  
Fellow, AEI-Brookings Joint Center for Regulatory Studies

Maureen L. Cropper  
Professor of Economics, University of Maryland  
Chair, EPA Advisory Council on Clean Air Compliance Analysis

Christopher C. DeMuth  
President, American Enterprise Institute  
Former Administrator, Office of Information and Regulatory Affairs, Office of Management and Budget

George C. Eads  
Vice President, Charles River Associates  
Former Member, President's Council of Economic Advisers

Milton Friedman  
Senior Research Fellow, Hoover Institution, Stanford University  
Nobel Laureate in Economics

John D. Graham  
Professor of Policy and Decision Sciences, Harvard School of Public Health, Harvard University  
Director, Harvard Center for Risk Analysis

Wendy L. Gramm  
Director, Regulatory Studies Program, Mercatus Center, George Mason University  
Former Administrator, Office of Information and Regulatory Affairs, Office of Management and Budget

Robert W. Hahn  
Director, AEI-Brookings Joint Center for Regulatory Studies

**Paul L. Joskow**

Professor of Economics, Massachusetts Institute of Technology  
Director, MIT Center for Energy and Environmental Policy  
Research

**Alfred E. Kahn**

Robert Julius Thorne Professor of Political Economy  
Emeritus, Cornell University  
Former Chairman, Civil Aeronautics Board

**Paul R. Krugman**

Professor of Economics, Princeton University

**Lester B. Lave**

University Professor and Higgins Professor of Economics,  
Carnegie Mellon University  
Member, EPA Advisory Council on Clean Air Compliance  
Analysis

**Robert E. Litan**

Vice President and Director, Economic Studies Program,  
Brookings Institution  
Codirector, AEI-Brookings Joint Center for Regulatory Studies

**Randall W. Lutter**

Resident Scholar, American Enterprise Institute  
Fellow, AEI-Brookings Joint Center for Regulatory Studies

**Paul W. MacAvoy**

Williams Brothers Professor of Management Studies, Yale School  
of Management, Yale University  
Former Member, President's Council of Economic Advisers

Paul W. McCracken  
Edmund Ezra Day Distinguished University Professor Emeritus of  
Business Administration, Economics, and Public Policy,  
University of Michigan, Ann Arbor  
Former Chairman, President's Council of Economic Advisers

James C. Miller III  
John M. Olin Distinguished Fellow, Citizens for a Sound Economy  
Foundation  
Former Director, Office of Management and Budget

William A. Niskanen  
Chairman, Cato Institute  
Former Member, President's Council of Economic Advisers

William D. Nordhaus  
Griswold Professor of Economics, Yale University  
Former Member, President's Council of Economic Advisers

Wallace E. Oates  
Professor of Economics, University of Maryland  
University Fellow, Resources for the Future

Peter Passell  
Senior Fellow, Milken Institute

Sam Peltzman  
Sears, Roebuck Professor of Economics and Financial Services,  
Graduate School of Business, University of Chicago  
Director, George J. Stigler Center for the Study of the Economy  
and the State, University of Chicago

Paul R. Portney  
President, Resources for the Future  
Former Chief Economist, President's Council on Environmental Quality

Alice M. Rivlin  
Senior Fellow, Brookings Institution  
Former Director, Office of Management and Budget

Milton Russell  
Professor of Economics Emeritus, University of Tennessee  
Former Assistant Administrator for Policy, Planning, and Evaluation, Environmental Protection Agency

Richard L. Schmalensee  
Dean, Alfred P. Sloan School of Management, Massachusetts Institute of Technology  
Former Member, President's Council of Economic Advisers

Charles L. Schultze  
Senior Fellow Emeritus, Brookings Institution  
Former Chairman, President's Council of Economic Advisers

V. Kerry Smith  
University Distinguished Professor, North Carolina State University  
Director, Center for Environmental and Resource Economics Policy, North Carolina State University

Robert M. Solow  
Professor Emeritus, Massachusetts Institute of Technology  
Nobel Laureate in Economics

Robert N. Stavins

Albert Pratt Professor of Business and Government, John F.  
Kennedy School of Government, Harvard University  
Chairman, EPA Environmental Economics Advisory Committee

Joseph E. Stiglitz

Professor of Economics, Stanford University  
Former Chairman, President's Council of Economic Advisers

Laura D'Andrea Tyson

Dean, Haas School of Business, University of California, Berkeley  
Former Chair, President's Council of Economic Advisers

W. Kip Viscusi

John F. Cogan, Jr., Professor of Law and Economics, Harvard  
Law School, Harvard University

Murray L. Weidenbaum

Chairman, Center for the Study of American Business, Washington  
University, St. Louis  
Former Chairman, President's Council of Economic Advisers

Janet L. Yellen

Eugene E. and Catherine M. Trefethen Professor of Business  
Administration and Professor of Economics, University of  
California, Berkeley  
Former Chair, President's Council of Economic Advisers

Richard J. Zeckhauser

Frank P. Ramsey Professor of Political Economy, John F. Kennedy  
School of Government, Harvard University