

The Case for Co-Benefits: Regulatory Impact Analyses and the Environmental Protection Agency's Mercury and Air Toxics Standards

Table of Contents

I. Introduction: Co-Benefits in Federal Environmental Regulations	3
II. History: The Bipartisan Story of Co-Benefits	5
A. History of Regulatory Review and Economic Analyses.....	5
1) <i>1970s – The First Regulatory Analysis Requirements</i>	<i>5</i>
2) <i>1980s – Executive Order 12,291</i>	<i>6</i>
3) <i>1990s – Executive Order 12,866.....</i>	<i>7</i>
4) <i>Assessing Reagan, Bush and Clinton Analyses</i>	<i>8</i>
5) <i>2000s – Continuing Clinton-Era Policies</i>	<i>8</i>
B. Executive Consensus on ‘Overall’ Social Costs and Benefits.....	9
C. Examples of Previous Use of Co-Benefits at EPA.....	11
1) <i>Lead in Gasoline – 1985.....</i>	<i>11</i>
2) <i>Inter-Media Effects of Organic Chemicals – 1987</i>	<i>13</i>
3) <i>Assessing the Montreal Protocol – 1987.....</i>	<i>14</i>
4) <i>Other Potential Examples.....</i>	<i>14</i>
D. Co-Benefits in the Obama Administration	15
III. Analytical Practice: The Accepted Role of Co-Benefits	15
A. Consensus on Inclusion in Principle.....	15
B. Differences Emerge in Practice.....	17
IV. Legal Justification: The Clean Air Act and MATS.....	18
A. As-Applied Objections from EPA Critics	18
B. Three General Arguments from Administration Critics	18
1) <i>Section 112 PM Co-Benefits Are ‘Inappropriate’ in Light of Section 110... </i>	<i>19</i>
2) <i>EPA’s Estimates Regarding Low-Level PM Reductions Are Erroneous .</i>	<i>20</i>
3) <i>Excessive Targeting of PM Reductions – Pattern of Agency Practice</i>	<i>21</i>
C. Avoiding the Common Law of Benefit-Cost Analysis.....	22
D. Four Rejoinders to MATS Critics	23
1) <i>The Clean Air Act Does Not Preclude PM Co-Benefits.....</i>	<i>24</i>
2) <i>Court Support for Action Based on Ancillary Effects.....</i>	<i>24</i>
3) <i>BCA Methodology Falls Well Within Agency Discretion</i>	<i>25</i>
4) <i>Interconnectedness of Air Regulations Explains Multiple PM Effects</i>	<i>27</i>
V. Conclusion	28

I. Introduction: Co-Benefits in Federal Environmental Regulations

A coincidental benefit (or co-benefit) of federal regulatory action is officially defined by the Office of Management and Budget as “a favorable impact of [a] rule that is typically unrelated or secondary to the statutory purpose of the rulemaking.”¹ Under longstanding and heretofore uncontroversial Executive Branch analytical practice, federal agencies assess and include the coincidental impacts of regulatory action in studying proposed rules.² For decades, benefit-cost analyses that inform federal regulatory decisions have included the value of co-benefits.

However, since 2011, critics of the Obama Administration’s Environmental Protection Agency (EPA) have challenged the role of co-benefits in recent air pollution regulatory impact analyses (RIAs).³ Because air quality control technologies installed to capture particular pollutants like mercury often reduce other types of pollution as well, regulatory analyses identify and attempt to monetize the value to society of *all* the expected emissions reductions from proposed air rules. Critics allege that the EPA has inappropriately and erroneously over-relied on these coincidental effects to justify new regulations, especially with respect to the health benefits from reducing particulate matter (PM) concentrations.

Approved in 2011, the EPA’s Mercury and Air Toxics Standards (MATS) for power plants are expected to result in sizeable coincidental PM-related health benefits, which according to the MATS RIA, greatly exceed the value of the rule’s mercury-related benefits.⁴ Since regulatory action was thus found cost-effective by the Obama Administration, the MATS rule proceeded, with the EPA acknowledging but not legally relying on the results of the RIA for its regulatory authority. To at least some petitioners challenging the MATS rule in the on-going case *Michigan v.*

¹ OFFICE OF INFO. & REGULATORY AFFAIRS, OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, REGULATORY IMPACT ANALYSIS: A PRIMER 7 (Aug. 15, 2011) [hereinafter OMB CIRCULAR A-4 PRIMER], *available at* https://www.whitehouse.gov/sites/default/files/omb/inforeg/regpol/circular-a-4_regulatory-impact-analysis-a-primer.pdf.

² *See* discussion *infra* Part II.

³ *See* discussion *infra* Part IV.B.

⁴ OFFICE OF AIR QUALITY PLANNING AND STANDARDS, HEALTH AND ENVIRONMENTAL IMPACTS DIVISION, U.S. ENVTL. PROT. AGENCY, REGULATORY IMPACT ANALYSIS FOR THE FINAL MERCURY AND AIR TOXICS STANDARDS ES-1-ES-9 (December 2011) [hereinafter 2011 MATS RIA], *available at* <http://www3.epa.gov/ttnecas1/regdata/RIAs/matsriafinal.pdf>.

EPA,⁵ this represents a “textbook case of the administrative misuse of statutory authority.”⁶

Critics and petitioners in *Michigan* ground their legal argument in the fact that the statutory authority for the MATS rule comes from Section 112 of the Clean Air Act (CAA) devoted to regulating mercury and other hazardous air pollutants (HAPs), while a different section—Section 110—addresses ambient PM levels. Other critiques have similarly suggested that PM health benefits can only be obtained (legally and efficiently) through setting Section 110 standards. The present controversy raises at least three key questions about the use of co-benefits in regulatory impact analyses:

- **History** – Does the consideration of co-benefits in previous presidential administrations and agencies rise to the level of an established bipartisan administrative practice?
- **Analytical Practice** – Is the inclusion of co-benefits in agency benefit-cost studies considered sound analytical practice by economists and other experts?
- **Legal Justification** – Was the EPA justified in considering co-benefits in the particular legal context of Section 112 and the MATS RIA?

This paper contends that the answer to each of the above is yes. The sections below address the history and analytical practice of using co-benefits to inform federal regulatory decision-making before turning to the particular legal context of the MATS rulemaking at issue in *Michigan v. EPA*.

⁵ *White Stallion Energy Center v. EPA*, 748 F.3d 1222 (D.C. Cir. 2014), *rev'd sub nom. Michigan v. EPA*, 135 S. Ct. 2699 (2015), *remanded to White Stallion Energy Center v. EPA*, No. 12-1100, 2015 BL 411732 (D.C. Cir. Dec 15, 2015) (ongoing on remand in the D.C. Circuit after a threshold matter was settled by the Supreme Court in 2015).

⁶ Petition for Writ of Certiorari at 5, *Nat'l Mining Ass'n v. EPA*, 135 S. Ct. 2699 (2015) (No. 14-49), 2014 WL 3530754 (U.S.) at *5 (case consolidated with *Michigan v. EPA*).

II. History: The Bipartisan Story of Co-Benefits

A. History of Regulatory Review and Economic Analyses

Regulatory impact analyses have been conducted by the federal government since at least 1971. From the Nixon Administration until today, Presidents of both parties have built upon the regulatory review practices of their predecessors. Over time, this has resulted in increasingly sophisticated economic analyses of proposed regulations overseen by the Office of Management and Budget (OMB). From the very beginning these reviews have explicitly included the indirect and societal effects of agency action.⁷

1) 1970s – *The First Regulatory Analysis Requirements*

For nearly 45 years, beginning in the Nixon Administration, executive branch agencies have been expected to prepare regulatory analyses. Agencies are generally expected to explain the basis for their proposed regulatory action, list action alternatives, and make some assessment of the economic impact of their choices.⁸

President Nixon’s “Quality of Life” program, announced in a 1971 memo to executive agencies by then-OMB Director George Shultz, marked the first attempt to move agencies towards comprehensive analyses of the impact of their regulations.⁹ The EPA was at the heart of this analytical effort from the beginning – “critics of the Quality of Life review process complained that it focused primarily, if not exclusively, on EPA rules.”¹⁰ In a 1980s report on the use of benefit-cost analysis (BCA), EPA noted that they had “been preparing analyses of environmental

⁷ See generally Alan Carlin, *The New Challenge to Cost-Benefit Analysis*, REGULATION, Fall 2005, at 18 (explaining “the history of bipartisan support for CBA”).

⁸ John Graham et al., *Managing the Regulatory State: The Experience of the Bush Administration*, 33 FORDHAM URB. L.J. 101, 104 (2005); OFFICE OF POLICY PLANNING AND EVALUATION, U.S. ENVTL. PROT. AGENCY, EPA’S USE OF BENEFIT-COST ANALYSIS: 1981-1986 2-1 (August 1987) [hereinafter EPA 1981-1986], available at [http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0222-1.pdf/\\$file/EE-0222-1.pdf](http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0222-1.pdf/$file/EE-0222-1.pdf).

⁹ Graham et al., *supra* note 8, at 104.

¹⁰ *Id.*

regulations since [their] inception, both to provide information essential to fulfilling its statutory responsibilities and also to comply with executive orders.”¹¹

President Ford continued this analytical tradition by issuing Executive Order 11,821 in 1974, requiring agency “Inflation Impact Statements.”¹² These statements represented the first detailed impact analyses of proposed regulations on economic productivity and competition.¹³ Despite being politically portrayed as indifferent to regulatory largesse, President Carter was the first to require holistic regulatory impact analyses that explicitly considered “unnecessary burdens on the economy, on individuals, or on State and local governments.”¹⁴ By signing the Regulatory Flexibility Act and Paperwork Reduction Act, President Carter also played a key role in creating the Office of Information and Regulatory Affairs (OIRA) at OMB.¹⁵

2) 1980s – Executive Order 12,291

Swept into office on pledges to provide “regulatory relief,” President Reagan shifted the focus of regulatory review “from agencies policing their own regulations [over] to OMB review and oversight” at OIRA.¹⁶ Issued less than a month after taking office, Reagan’s Executive Order 12,291 “strengthened the regulatory analysis requirements” in a more formal OMB review process.¹⁷ Most importantly, Executive Order 12,291 required agencies “to the extent permitted by law” to refrain from regulatory action “unless the potential benefits to society for the regulation outweigh the potential costs to society.”¹⁸ When choosing to act, agencies were to prioritize “maximizing the net benefits to society” and pursue those regulatory

¹¹ EPA 1981-1986, *supra* note 8, at 2-1.

¹² Graham et al., *supra* note 8, at 105.

¹³ EPA 1981-1986, *supra* note 8, at 2-3.

¹⁴ Graham et al., *supra* note 8, at 106 (describing President Carter’s Exec. Order No. 12,044). *See also* Exec. Order No. 12,044, 43 Fed. Reg. 12661 (Mar. 23, 1978); EPA 1981-1986, *supra* note 8, at 2-3, 2-4.

¹⁵ Graham et al., *supra* note 8, at 106.

¹⁶ *Id.* at 108.

¹⁷ *Id.* at 109.

¹⁸ Exec. Order No. 12,291, 46 Fed. Reg. 13193 (Feb. 17, 1981). Though this Executive Order did not explicitly mandate BCAs for all regulations, “such analysis is implicit in the requirement that the alternative with the greatest net benefits be chosen.” EPA 1981-1986, *supra* note 8, at 2-4.

alternatives “involving the least net cost to society.”¹⁹ Under this guidance, officials in the Reagan Administration produced several important studies that explicitly considered co-benefits, as discussed in more detail below. Although President George H.W. Bush’s choice to head OIRA was never confirmed, his administration largely continued following Executive Order 12,291.²⁰

3) 1990s – Executive Order 12,866

President Clinton set the foundation for the current agency regulatory review process by replacing Reagan-era requirements with Executive Order 12,866 in 1993, though the central question for agencies still remains whether proposed agency action produces “net benefits” for society.²¹ In that executive order, and perhaps reflecting liberal critiques of agency paralysis in the face of data uncertainty, President Clinton explicitly added the consideration of non-quantifiable effects to regulatory analysis.²²

Though not plainly defining the term “net benefits,” Executive Order 12,866 did direct agencies to “assess *all* costs and benefits of available regulatory alternatives” and unless otherwise directed by statute, “select those approaches that maximize net benefits” to society.²³ Further, this order somewhat relaxed the Reagan-era insistence on a positive balance of benefits to costs by instead requiring that: “(6) Each agency shall assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation *justify* its costs.”²⁴ In other words, since 1993, federal

¹⁹ Exec. Order No. 12,291, *supra* note 18.

²⁰ Graham, *supra* note 8, at 112. President George H.W. Bush’s greatest contributions to regulatory policy were legislative – signing the Americans with Disabilities Act and the CAA Amendments of 1990. *Id.*

²¹ Graham, *supra* note 8, at 112.

²² Exec. Order No. 12,866, 58 Fed. Reg. 51735 (Sept. 30, 1993).

²³ *Id.* at Section 1(a) (emphasis added).

²⁴ *Id.* at Section 2(a)(6) (emphasis added). *See also* Cass Sunstein, Commentary, *The Office of Information and Regulatory Affairs: Myths and Realities*, 126 HARV. L. REV. 1838, 1865 (2013).

agencies have recognized that non-monetized benefits may still be substantial enough to warrant regulation.

4) *Assessing Reagan, Bush and Clinton Analyses*

A 2005 study by the American Enterprise Institute and the Brookings Institution observed that although presidential administrations increased and expanded their requirements for regulatory analysis, the practice of conducting these analyses remained largely idiosyncratic. The AEI-Brookings research team conducted a retrospective analysis of 74 RIAs from the Reagan, Bush and Clinton administrations and found that the practice of performing regulatory analyses was – for lack of a better description – consistently inconsistent across administrations. Though there was “no clear trend in the quality of cost-benefit analyses across administrations,” throughout that period the EPA had “not done a very good job of complying with executive orders or OMB guidelines.”²⁵ Partly because of the one-off nature of each analysis, and the variations in data availability and appropriate methodologies, the reviewers “conclude[d] that there is no strong statistical evidence to suggest that the quality of RIAs is getting better or worse over time.”²⁶

5) *2000s – Continuing Clinton-Era Policies*

President George W. Bush explicitly embraced and continued Clinton-era regulatory review policy, which has remained stable up to the present. Finding Executive Order 12,866 “to be workable,” Bush’s OIRA did not seek or receive any changes in statutory authority from Congress to tweak the regulatory review process, and made only minor changes in the process in 2002 and 2007.²⁷ Bush’s

²⁵ Robert Hahn and Patrick Dudley, *How Well Does the Government Do Cost-Benefit Analysis?*, in AEI-BROOKINGS JOINT CENTER FOR REGULATORY STUDIES WORKING PAPER 04-01 at ES, 18, 22 (January 2004), *available at* https://www.law.upenn.edu/institutes/regulation/papers/hahn_paper.pdf.

²⁶ Hahn and Dudley, *supra* note 25, at 19

²⁷ Bush Exec. Order No. 13,258 in 2002 shifted responsibility for resolving agency conflicts from the Vice President to the President’s Chief of Staff, Graham, *supra* note 8, at 114, and the Bush Administration extended OIRA’s authority to significant guidance documents produced by agencies in 2007, CURTIS W. COPELAND, CONG. RESEARCH SERV., RL33862, CHANGES TO THE OMB REGULATORY REVIEW PROCESS BY EXECUTIVE ORDER 13422 3 (2007).

primary legacy with respect to the OIRA process is OMB Circular A-4 issued in 2003, a guidance document to agencies giving them more substantial descriptions of how to perform RIAs.²⁸ This effort to better standardize methodological approaches expressly called for the consideration and monetization of co-benefits, as described below.

The Obama Administration, like its predecessor, has largely kept the same review policies in place. Though stepping away from some Bush Administration attempts to exert OMB supervision over agencies, Executive Order 12,866 review continues today in much the same form.²⁹ In 2011, President Obama reiterated and reaffirmed the Clinton-era policy of focusing on net benefits and including difficult-to-quantify effects in RIAs, enumerating “equity, human dignity, fairness, and distributive impacts” as examples.³⁰ Indeed, the EPA in 2014 noted that “with a few exceptions, the collection of [Executive Orders] and statutes that govern the conduct of economic analysis and distributional analysis has remained largely unchanged since 2000.”³¹

B. Executive Consensus on ‘Overall’ Social Costs and Benefits

Throughout the entire history of regulatory review, Presidential administrations of both parties have stressed that regulatory analysis should focus on the *overall societal* benefits and costs expected to come from regulatory action. From the 1971 Shultz memo mentioning “expected benefits or accomplishments” of regulatory action, to the Carter expectation that “direct *and indirect* effects of the

²⁸ See OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, REGULATORY ANALYSIS, 2003 WL 24011971 (Sept. 17, 2003) [hereinafter OMB CIRCULAR A-4], *available at* https://www.whitehouse.gov/omb/circulars_a004_a-4/.

²⁹ Exec. Order No. 13,497, 74 Fed. Reg. 6113 (Jan. 30, 2009). Exec. Order No. 13,497 approved very early in the Obama Administration rescinded the Bush-era Exec. Order 13422 that required agencies to identify a specific market failure or problem that warranted regulation and choose a ‘regulatory policy officer’ among Presidential appointees – a move that in the Bush years had been seen as exerting greater Presidential influence over regulatory policy choices. See COPELAND, *supra* note 27.

³⁰ Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 18, 2011).

³¹ NAT’L CTR. FOR ENVTL. ECON., OFFICE OF POLICY, U.S. ENVTL. PROT. AGENCY, GUIDELINES FOR PREPARING ECONOMIC ANALYSES 1-1 (2014), *available at* [http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0568-50.pdf/\\$file/EE-0568-50.pdf](http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0568-50.pdf/$file/EE-0568-50.pdf).

regulation” will be studied, to the Reagan directive to “maximize the net benefits to *society*,” regulatory analyses have always taken a societal-level approach to estimating benefits.³² This focus continued in 1993 with the required assessment of “*all costs and benefits of available regulatory alternatives.*”³³ No Presidential policy on regulatory analysis has ever directed an agency *not* to consider co-benefits.

In fact, from 1996 on, Presidents of both parties have encouraged the formal consideration of indirect benefits. In an OMB guidance document circulated to agencies, the Clinton OMB told agencies that “an attempt should be made to quantify *all potential real incremental benefits to society* in monetary terms to the maximum extent possible” including any interaction effects between different federal regulations.³⁴ In 2000, OMB directed agencies to consider benefits that are indirectly traded in markets (like health and safety risks and ‘use’ values of environmental resources), and even benefits that have no tradable economic value at all, like the existence value of environmental or cultural resources.³⁵

The Bush Administration took this commitment to full accounting of societal effects a step further in the most formal – and still governing – guidelines for agency RIAs, issued in OMB Circular A-4 in 2003. Building on Clinton-era guidance, in order to “evaluate properly” in cost-benefit analysis, agencies are expected to: “Identify the expected undesirable side-effects and ancillary benefits of the proposed regulatory action and the alternatives. These should be added to the

³² Memorandum from George P. Shultz, Director, Office of Management and Budget, to Heads of Departments and Agencies (Oct. 5, 1971), *available at* <http://www.thecre.com/ombpapers/QualityofLife1.htm>; Exec. Order No. 12,044 *supra* note 14 (emphasis added); Exec. Order No. 12,291, *supra* note 18 (emphasis added).

³³ Exec. Order No. 12,866, *supra* note 22 (emphasis added).

³⁴ OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, ECONOMIC ANALYSIS OF FEDERAL REGULATIONS UNDER EXECUTIVE ORDER 12866 at III(B) (Jan. 11, 1996) (emphasis added), *available at* https://www.whitehouse.gov/omb/inforeg_riaguide/.

³⁵ OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, GUIDELINES TO STANDARDIZE MEASURES OF COSTS AND BENEFITS AND THE FORMAT OF ACCOUNTING STATEMENTS 10, 11 (Mar. 22, 2000), *available at* <https://www.whitehouse.gov/sites/default/files/omb/assets/omb/memoranda/moo-08.pdf>.

direct benefits and costs as appropriate . . . A complete regulatory analysis includes a discussion of non-quantified as well as quantified benefits and costs.”³⁶

In the view of the Bush OMB, agency analysts are to “look beyond the direct benefits and direct costs of your rulemaking” to include “any important ancillary benefits and countervailing risks.”³⁷ Rather than a categorical exclusion, the limits on considering co-benefits are the same as on quantifying any other effect – data and methodological limitations that undermine certainty. The reliability and magnitude of indirect effects are the keys to deciding whether to include them in an RIA, since “highly speculative or minor consequences may not be worth further formal analysis.”³⁸ Considering coincidental effects at least at an initial level, though, is essential to good analysis since “in some cases the mere consideration of these secondary effects may help in the generation of a superior regulatory alternative with strong ancillary benefits and few countervailing risks.”³⁹

C. Examples of Previous Use of Co-Benefits at EPA

As Circular A-4 states, consideration of secondary effects can indeed lead to the development of “superior regulatory alternative[s] with strong ancillary benefits,”⁴⁰ as evidenced by three examples of air co-benefits studied at EPA during the Reagan Administration.

1) *Lead in Gasoline – 1985*

In the mid-1980s, the EPA decided to study the potential effects of reducing the lead content in gasoline down to zero or near-zero levels. Lead had been used as

³⁶ OMB CIRCULAR A-4, *supra* note 28. *See also* OMB CIRCULAR A-4 PRIMER, *supra* note 1, at 7.

³⁷ OMB CIRCULAR A-4, *supra* note 28. Taking the commitment to full accounting for all effects seriously, included with the Circular is a form that resembles a mock ‘accounting statement’ to help guide the complete balancing of costs and benefits of proposed agency action. OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, OMB CIRCULAR A-4 FORM (2003), *available at* https://www.whitehouse.gov/sites/default/files/omb/assets/omb/circulars/a004/a04_form.pdf.

³⁸ OMB CIRCULAR A-4, *supra* note 28.

³⁹ *Id.* (also mentioning a study about weight-based fuel economy standards).

⁴⁰ *Id.*

a fuel additive for decades to improve engine performance and octane ratings, though since 1973 lead had begun to be phased out of gasoline due to its harmful health effects.⁴¹ Though lead was also regulated as a criteria air pollutant under the CAA's Section 110 ambient air quality program, it "settles out of the air relatively quickly," and instead of Section 110, EPA used their CAA mobile-source regulatory authority to address lead in gasoline.⁴²

Partially to show that risk management principles could be successfully used to promote cost-effective regulation, EPA conducted a benefit-cost analysis to explore the potential benefits from significantly reducing or eliminating lead in gasoline. What emerged was a draft "substantially more extensive than that of a typical EPA analysis,"⁴³ which led to a final study addressing an important co-benefit: ancillary reductions in hydrocarbon and nitrogen oxides (NO_x) pollution.⁴⁴

EPA realized in 1982 that as many as 12% of all cars on the road designed to use only unleaded gasoline were being "misfueled" with leaded gasoline.⁴⁵ Since these cars were not designed to handle lead, misfueling caused pollution-controlling catalytic converters to stop functioning. By reducing average lead content from 1.1 grams per gallon to 0.1 grams per gallon – and thereby alleviating 80% of the destructive impact of misfueling on catalytic converters – EPA estimated that a new lead rule would bring about ground-level ozone reductions (and other corresponding health benefits) in addition to providing direct children's health and car maintenance benefits.⁴⁶ In the finished analysis accompanying the final rule, EPA estimated the monetized co-benefits of reducing ozone precursors to be worth \$222 million in 1986, the first full year of implementation, amounting to 16.9% of

⁴¹ Albert L. Nichols, *Lead in Gasoline*, in ECONOMIC ANALYSES AT EPA 49-51 (Richard D. Morganstern ed., 1997).

⁴² *Id.* at 50.

⁴³ *Id.* at 55.

⁴⁴ OFFICE OF POLICY ANALYSIS, U.S. ENVTL. PROT. AGENCY, *Benefits of Reducing Pollutants Other than Lead*, in COSTS AND BENEFITS OF REDUCING LEAD IN GASOLINE: FINAL REGULATORY IMPACT ANALYSIS at VI-I (February 1985) [hereinafter EPA REDUCING LEAD], available at [http://yosemite.epa.gov/ee/epa/eerm.nsf/vwAN/EE-0034-1.pdf/\\$file/EE-0034-1.pdf](http://yosemite.epa.gov/ee/epa/eerm.nsf/vwAN/EE-0034-1.pdf/$file/EE-0034-1.pdf).

⁴⁵ Nichols, *supra* note 41, at 53.

⁴⁶ *Id.* at 69, 70. See also EPA 1981-1986, *supra* note 8, at 4-6.

the total benefits of the rule.⁴⁷ EPA moved to finalize this rule not because of Congressional pressure or statutory mandates, but rather on EPA's own initiative, given that the rule was "strongly supported by the benefit-cost analysis included in the RIA."⁴⁸ In practice, the rule was even more successful than anticipated since gasoline stations *en masse* moved away from selling leaded gasoline at all, leading the way towards a total Congressional prohibition on lead gasoline additives that took effect in 1995.⁴⁹

2) *Inter-Media Effects of Organic Chemicals – 1987*

While studying effluent discharges related to organic chemicals, plastics and synthetic fibers under the Clean Water Act, EPA in 1987 found that these effluent discharges also led to ozone-causing volatile organic compound (VOC) air emissions at wastewater treatment plants.⁵⁰ EPA included the possibility of installing control technologies for these emissions in their RIA, and found that this requirement would greatly increase the cost-effectiveness per unit of emissions reduction. Though EPA eventually decided that requiring these controls went beyond their authority under the Clean Water Act and would only later come back to it under the CAA, EPA staff noted that their inclusion "helped ensure OMB approval of a controversial regulation" on effluent discharges.⁵¹ In total, these co-benefits amounted to between 5-16% of total benefits.⁵²

⁴⁷ Nichols, *supra* note 41 at 74. For 1986, EPA estimated \$600 million in children's health benefits, the \$222 million in ozone benefits mentioned above, as well as \$1.101 billion in car maintenance and fuel economy benefits. Costs were estimated at \$608 million in increased refining costs. Similar results were noted for the 1987 and 1988 years. EPA REDUCING LEAD, *supra* note 44, at E-12.

⁴⁸ Nichols, *supra* note 41 at 62.

⁴⁹ Nichols, *supra* note 41 at 76. EPA predicted that 16 billion gallons of leaded gasoline would be sold per year at the lower threshold of 0.1 grams per gallon, but only 800 million (1/20th of the estimate) were eventually sold. *Id.*

⁵⁰ Peter Caulkins and Stuart Sessions, *Water Pollution and the Organic Chemicals Industry*, in ECONOMIC ANALYSES AT EPA, *supra* note 41 at 113-14. See also EPA 1981-1986, *supra* note 8, at 4-6.

⁵¹ Caulkins and Sessions, *supra* note 50 at 120. VOC controls for these sources were later required under a 1994 hazardous air pollution rule. *Id.* at 121.

⁵² *Id.* at 115.

3) *Assessing the Montreal Protocol – 1987*

Late in the Reagan Administration, during the negotiation and consideration of the chlorofluorocarbon (CFC) reductions eventually agreed-to in the Montreal Protocol, EPA undertook an analysis of the potential domestic impacts of compliance. EPA found that in the absence of action, continued breakdowns in stratospheric ozone would cause higher levels of UV-B radiation to reach Earth's surface and in turn create very significant human health impacts.⁵³ In addition, weakened stratospheric ozone would cause heightened ground-level ozone levels, since UV-B radiation increases would intensify ozone formation in the lower levels of the atmosphere. Implementing the Montreal Protocol was found to have ozone co-benefits as high as \$24 billion in net-present value terms.⁵⁴ Though President Reagan decided to join the Montreal Protocol before this analysis was publicly released, it did come out in time to bolster the case for ratification. EPA analysts concluded that “benefit-cost analysis was clearly important in decision[-]making about this issue.”⁵⁵

4) *Other Potential Examples*

In addition, the Institute for Policy Integrity at New York University's School of Law has listed five other instances where co-benefits were mentioned in Federal Register announcements for proposed or final rules, one each from the past five presidential administrations, though it is not readily apparent how large a role (quantitatively speaking) co-benefits played in those analyses.⁵⁶

⁵³ James Hammitt, *Stratospheric Ozone Depletion*, in ECONOMIC ANALYSES AT EPA, *supra* note 41 at 153.

⁵⁴ *Id.* at 151.

⁵⁵ *Id.* at 156.

⁵⁶ Brief for the Inst. for Policy Integrity at New York Univ. Sch. of Law as Amicus Curiae in Support of Respondents at 8-9, *Michigan v. EPA*, 135 S. Ct. 2699 (2015) (No. 14-46, 14-47, 14-49), 2015 WL 1048432.

D. Co-Benefits in the Obama Administration

Critics of the Obama Administration have claimed that the approach to co-benefits must have changed in the last few years, given the predominance of co-benefits in recent rule approvals.⁵⁷ OIRA Director Cass Sunstein's response to an inquiry by several House Republican committee leaders, however, noted the above history and grounded its defense of MATS in guidelines from the past three administrations, particularly the Bush-era Circular A-4. "Under Circular A-4 and Executive Orders 13563 and 12866, it is not only legitimate but necessary to consider such co-benefits" in order to provide for "full accounting" of costs and benefits.⁵⁸ OIRA's oversight role in reviewing BCAs under the Obama Administration is reported to be consistent with previous OIRA experiences in different administrations.⁵⁹

III. Analytical Practice: The Accepted Role of Co-Benefits

A. Consensus on Inclusion in Principle

It is not surprising that OIRA has consistently shown interest in regulatory co-benefits, because considering and including co-benefits in benefit-cost analysis is and always has been sound analytical practice. Nobel Laureate Kenneth Arrow, along with a host of other distinguished co-authors, noted the importance of 'spillover effects' and distributional concerns in spelling out the accepted basic principles of benefit-cost analysis in 1996:

Available data often permit reliable estimation of major policy impacts on important subgroups of the population. If a regulation results in economic spillovers that contribute significantly to job losses or

⁵⁷ See generally Susan E. Dudley, *Perpetuating Puffery: An Analysis of the Composition of OMB's Reported Benefits of Regulation*, 47 BUSINESS ECONOMICS 165 (2012) (discussing the nature of claimed regulatory benefits from 2002-2012).

⁵⁸ Letter from Cass Sunstein, Administrator, Office of Information and Regulatory Affairs, Office of Management and Budget to Rep. Andy Harris (Dec. 22, 2011), available at <http://science.house.gov/sites/republicans.science.house.gov/files/documents/20111222.pdf>.

⁵⁹ Sunstein, *supra* note 24 at 1864-74; *Id.* at 1844 ("On the basis of discussions with OIRA staff and with former Administrators, I believe that the general account offered here is consistent with the practices in other administrations.").

increased costs to a specific industry in a local economy, then it is appropriate to consider those in a benefit-cost analysis. Agencies should, however, *weigh those impacts against positive impacts that result elsewhere in the larger economy.*⁶⁰

Conservative analysts and commentators, including Bush-era OIRA

Administrator Susan Dudley, agree that in principle co-benefits must be included in respectable benefit-cost analyses:

It is certainly true that the principles of cost-benefit analysis have always required that, to the extent practicable, the ancillary or unintended side-effects of government action – both positive and negative – should be included in the accounting . . . [though] both ancillary benefits *and* costs should be included in the analysis.⁶¹

Even studies critical of the MATS rule, such as the American Energy Alliance report disdaining the “New ‘Benefits’” of environmental regulation, have agreed with the basic principle behind co-benefits: “If such a secondary benefit can be documented, it should be monetized and included in a cost-benefit analysis of the mercury regulation. So in principle, co-benefits are not objectionable.”⁶²

Perhaps the most unequivocal endorsement of ‘complete’ BCA, including indirect effects, comes from another critic of the MATS rule, former OIRA staffer Brian Mannix: “[BCA] strives to be complete – including, with appropriate weights, all of a decision’s consequences: remote as well as proximate, indirect as well as direct, diluted as well as concentrated, delayed as well as immediate, improbable as well as probable, unintentional as well as intentional.”⁶³ Mannix sees the goal of investigating ancillary impacts as “a clear view of those things that are not expected

⁶⁰ KENNETH J. ARROW ET AL., BENEFIT-COST ANALYSIS IN ENVIRONMENTAL, HEALTH, AND SAFETY REGULATION: A STATEMENT OF PRINCIPLES 6-7 (1996) (emphasis added), *available at* https://www.aei.org/wp-content/uploads/2014/04/-benefitcost-analysis-in-environmental-health-and-safety-regulation_161535983778.pdf.

⁶¹ SUSAN DUDLEY, BRIAN MANNIX AND SOFIE MILLER, PUBLIC INTEREST COMMENT ON OMB’S DRAFT 2014 REPORT TO CONGRESS ON THE BENEFITS AND COSTS OF FEDERAL REGULATIONS 8 (2014), *available at* https://www.whitehouse.gov/sites/default/files/omb/inforeg/2014_cb/comments/dudley-mannix-miller-2014-omb-report-to-congress.pdf.

⁶² SCOTT BEAULIER AND DANIEL SUTTER, AMERICAN ENERGY ALLIANCE, THE NEW “BENEFITS” OF ENVIRONMENTAL REGULATION 28 (2012), *available at* http://americanenergyalliance.org/wp-content/uploads/2012/10/New-Benefits-of-Environmental-Regulation_Final.pdf.

⁶³ Brian Mannix, *Employment and Human Welfare: Why Does Benefit-Cost Analysis Seem Blind to Job Impacts?*, in DOES REGULATION KILL JOBS? 192 (Cary Coglianese et al. eds., 2013).

to balance” or even themselves out in the wake of agency action – an exhaustive search for impacts, to be limited only by data reliability and the need to avoid double-counting.⁶⁴

Indeed, the consensus opinion among economists and observers – which has always been the consensus according to Dudley – is that “analysts should consider reinforcing effects (‘co-benefits’) as well as countervailing effects” since not including them would present an incomplete picture of the expected results of regulation.⁶⁵

B. Differences Emerge in Practice

In practice, however, the scrutiny applied to estimates of co-benefits often depends on the perspective of the commentator.⁶⁶ According to Richard Revesz and Michael Livermore at NYU’s Institute for Policy Integrity, conservative commentators in the 1990s, though accepting in principle of both co-benefits and “countervailing risks,” tended to focus on the negative impacts of regulation, to the exclusion of potential upsides.⁶⁷ Revesz and Livermore characterize this as a “pathology of failing to properly account for ancillary benefits” and cite Circular A-4

⁶⁴ *Id.*

⁶⁵ Adam Finkel, *Emitting More Light than Heat: Lessons from Risk Assessment Controversies for the ‘Job-Killing Regulations’ Debate*, in DOES REGULATION KILL JOBS?, *supra* note 63 at 141.

⁶⁶ See, e.g., Amy Sniden, *Formality and Informality in Cost-Benefit Analysis*, 2015 UTAH L. REV. 93, 120-29 (2015), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2442357; Daniel Farber, *Rethinking the Role of Cost-benefit Analysis*, 76 U. CHI. L. REV. 1355, 1361-65 (2009), available at <http://ssrn.com/abstract=1324388>; Lisa Heinzerling et al., *Applying CBA to Past Decisions: Was Environmental Protection Ever a Good Idea?*, 57 ADMIN. L. REV. 155, 155-57 (2005), available at <http://scholarship.law.georgetown.edu/cgi/viewcontent.cgi?article=1326&context=facpub>; Michael Livermore and Richard Revesz, Address, *Retaking Rationality Two Years Later*, 48 HOUS. L. REV. 2, 16 (2011), available at [http://www.houstonlawreview.org/archive/downloads/48-1_pdf/\(1\)Revesz.pdf](http://www.houstonlawreview.org/archive/downloads/48-1_pdf/(1)Revesz.pdf); Douglas Kysar, Commentary, *Politics by Other Meanings: A Comment on “Retaking Rationality Two Years Later”*, 48 HOUS. L. REV. 43, 43-48, 68 (2011), available at http://digitalcommons.law.yale.edu/cgi/viewcontent.cgi?article=4849&context=fss_papers; Matthew Adler and Eric Posner, *Rethinking Cost-Benefit Analysis*, 109 YALE L. J. 165, 165-69 (1999), available at http://scholarship.law.duke.edu/faculty_scholarship/2602/; Carlin, *supra* note 7 at 22-23.

⁶⁷ Michael Livermore and Richard Revesz, *Rethinking Health-Based Environmental Standards*, 89 N. Y. U. L. REV. 1184, 1247-51 (2014).

as a step in the right direction.⁶⁸ As further support for practical inclusion of co-benefits, they also cite a portion of the D.C. Circuit’s opinion in *Whitman v. American Trucking* (a portion not later reviewed by the Supreme Court) that prodded EPA to consider secondary effects and health benefits more broadly in setting ambient air quality levels.⁶⁹

IV. Legal Justification: The Clean Air Act and MATS

A. As-Applied Objections from EPA Critics

Not surprisingly then, it is on the specifics and the judgment employed in the MATS RIA and rulemaking where the critics of co-benefits have leveled their challenges. Generally, Obama Administration critics object to the fact that PM co-benefits dwarf benefits directly applicable to mercury reductions: “co-benefits in excess of primary benefits suggest that at a minimum the regulation is mislabeled, and perhaps unfounded . . . Absent direct benefits, co-benefits do not provide evidence of the need for regulation. The main benefits from regulating mercury should be from reductions in mercury.”⁷⁰

B. Three General Arguments from Administration Critics

Three notable challenges—from the American Energy Alliance, Susan Dudley, and economist Anne Smith—all follow the same general pattern. First, they allege that indirect particulate matter regulation through Section 112’s Hazardous Air Pollutants program is inappropriate given the fact that PM levels are already regulated under Section 110’s ambient air quality programs. They approach this question from quasi-legal and cost-effectiveness perspectives. Second, critics take issue with the scientific conclusion that EPA drew from studies of PM health impacts regarding the magnitude of impacts assumed to occur below the lowest measured exposure levels in extant studies. Third, critics allege excessive EPA

⁶⁸ *Id.* at 1250.

⁶⁹ *Id.*

⁷⁰ BEAULIER AND SUTTER, *supra* note 62 at 28, 29.

targeting of PM reductions, framing recent regulations as an unreasonable pattern of agency practice.

1) *Section 112 PM Co-Benefits Are ‘Inappropriate’ in Light of Section 110*

As Susan Dudley wrote in 2012: “Ninety-nine percent of the benefits attributed to the MATS rule are derived by assigning high dollar values to reductions in emissions of fine particles . . . which are not the focus of this regulation and which are regulated elsewhere.”⁷¹ This observation covers the essential logic of the Clean Air Act critique, that ambient air quality regulation of PM: 1) may not be properly calibrated if coincidental reductions can be effected through MATS; 2) in effect, bars EPA from also affecting PM under other authorities; and 3) implies that indirect PM reductions due to MATS will not be the most cost-effective approach of achieving reductions.

Although not a detailed legal critique – at the time of this writing, the *Michigan* petitioners have not yet filed full briefs on the merits on remand in the D.C. Circuit – these economists and business critics take the general approach that since PM is “a non-HAP pollutant” it is not within “the purpose or justification for a HAPs rule” and that if PM is “regulated to safe levels under other provisions of the CAA” then the MATS RIA is “an inappropriate justification for costly controls” under Section 112.⁷²

Dudley claims that it is hard to reconcile the co-benefits claimed in the MATS RIA with EPA’s 2006 ambient air quality PM standard, since that standard must by law be based on “*all* identifiable effects on public health or welfare.”⁷³ If the ambient level was set to truly protect public health, this argument goes, then there should be no additional benefits to be had from additional Section 112 regulation. “The current

⁷¹ Dudley, *supra* note 57 at 173. See also Susan Dudley, *OMB’s Reported Benefits of Regulation: Too Good to be True?*, REGULATION, Summer 2013, at 26-30.

⁷² *The American Energy Initiative: A Focus on What EPA’s Utility MACT Rule Will Cost U.S. Consumers: Hearing before the Subcomm. on Energy and Power of the H. Energy & Commerce Comm.*, 112th Cong. 8 (Feb. 8, 2012) (Prepared Statement of Anne Smith, NERA Econ. Consulting) [hereinafter Smith Statement], available at <http://energycommerce.house.gov/hearing/american-energy-initiative-what-epas-utility-mact-rule-will-cost-us-consumers>.

⁷³ Dudley, *supra* note 57 at 173.

EPA practice of claiming that thousands of PM_{2.5} related deaths remain on the table to provide co-benefits to justify an array of other air quality regulations with [an ambient standard] in place is unacceptable.”⁷⁴ Economist Anne Smith’s methodological critique, explained in more detail below, claims that “nearly all” of the claimed mortality co-benefits come from “areas that are already in attainment with the current” ambient PM standards.⁷⁵ Thus, “all of those estimated deaths would be . . . [from] areas that are protected with an ‘adequate margin of safety’” already, as set by EPA.⁷⁶

Dudley and others summarize the Section 110 cost-effectiveness argument by arguing that:

Straightforward economic analysis tells us that EPA should be able to reduce PM emissions more cost-effectively by constraining PM emissions directly (which it has, in fact, already done) than by constraining mercury emissions to produce an indirect PM reduction. Therefore, after taking into account EPA’s direct PM rules, it is implausible to claim that the mercury rule has incremental PM co-benefits that exceed the total costs of the rule. Any such benefits will have been obtained by paying a higher price than would be incurred by constraining PM directly.⁷⁷

Essentially, by requiring equivalent PM reductions from across all PM sources, rather than simply power plants, EPA could in theory reduce the cost of achieving these health benefits.⁷⁸

2) *EPA’s Estimates Regarding Low-Level PM Reductions Are Erroneous*

Smith lodges her main critique against the EPA RIA co-benefits analysis by claiming “the primary reason [these] estimates have become less credible is that EPA is now extrapolating PM_{2.5} risk estimates far below the lowest level of PM_{2.5} for which risks have ever been estimated in the epidemiological literature.”⁷⁹ Calling it an “inflationary effect,” Smith claims that EPA’s use of a linear function to estimate

⁷⁴ BEAULIER AND SUTTER, *supra* note 62 at 30-31.

⁷⁵ Smith Statement, *supra* note 72 at 17, 19.

⁷⁶ *Id.* at 17.

⁷⁷ DUDLEY ET AL., *supra* note 61 at 8.

⁷⁸ BEAULIER AND SUTTER, *supra* note 62 at 30.

⁷⁹ Smith Statement, *supra* note 72 at 16-17.

the health effects of PM exposure below lowest measured levels (essentially an assumption that effects continue at the same rate and there is no *de minimis* threshold of PM pollution below which health risks are minimal) purposefully overstates co-benefits.⁸⁰

Taken together, Smith’s review of EPA’s RIA may leave little or no room for PM co-benefits at all. She asserts that it is “not appropriate” for EPA to be claiming health benefits for reductions below ambient air quality standards levels (representing 89% of claimed mortality co-benefits), and also asserts that “extensive extrapolation” beyond scientifically measured levels accounts for the bulk of them anyway.⁸¹ Smith’s attempt to invalidate all co-benefits is perhaps a bit strained; Dudley’s attempt to “adjust” EPA’s recent PM numbers in her paper, in contrast, would still result in positive regulatory net benefits overall.⁸²

3) *Excessive Targeting of PM Reductions – Pattern of Agency Practice*

Critics also lodge a generalized grievance about recent EPA rulemakings – that the increased prevalence of PM co-benefits in recent air rule analyses gives “the impression that the underlying analyses are, indeed, strongly biased by a one-sided search for beneficial ancillary effects.”⁸³ Smith points to five additional rulemakings other than MATS, “for which over 99 percent of reported benefits derive from ancillary reductions in PM_{2.5}.”⁸⁴ This, to Dudley, indicates that the Obama Administration is using “these inflated benefits figures to make claims about regulatory success” which, using an umpire analogy with respect to OIRA, makes one wonder if “the game is played fairly.”⁸⁵ Even more aggressive claims on this score come from the American Energy Alliance, which asserts that “in practice, the

⁸⁰ *Id.* at 17, 18, 21. *See also* Dudley, *supra* note 57 at 169, 171. As evidence for her claim that EPA’s extrapolation “reveals a true credibility deficit,” Smith compares mortality rates across the country to EPA’s upper-bound co-benefits estimate, concluding that EPA’s figure would mean unreasonably large portions of American deaths are “due to PM_{2.5}.” Smith Statement, *supra* note 72 at 19-21.

⁸¹ Smith Statement, *supra* note 72 at 19.

⁸² Dudley, *supra* note 57 at 175.

⁸³ DUDLEY ET AL., *supra* note 61 at 8.

⁸⁴ Dudley, *supra* note 57 at 171 (citing to Smith).

⁸⁵ *Id.* at 175.

EPA treats PM_{2.5} deaths like a reservoir of benefits to apportion out to justify any new regulation.”⁸⁶

C. Avoiding the Common Law of Benefit-Cost Analysis

Before rebutting these potential claims, it should be noted that a potential threshold defense could be mounted against them all – arguing that EPA’s action in weighing the costs and benefits of MATS is not judicially reviewable. Though the Supreme Court opined in their 2015 *Michigan* decision that EPA’s appropriate and necessary finding under Section 112 must include some consideration of costs, it specifically observed that *benefit-cost analysis is not required under the relevant statute*.⁸⁷ Thus, since executive orders are not judicially enforceable,⁸⁸ in the absence of statutory commands there is no legal requirement for EPA to have even pursued any benefit-cost balancing, and by extension, no opportunity for the judiciary to go above and beyond those requirements to substantively review agency expert decisions and methodology.⁸⁹

The Administrative Procedure Act’s generous arbitrary and capricious review possibility, however, might offer enough law to apply for challengers to obtain searching review of the MATS RIA.⁹⁰ Noted benefit-cost scholar Kip Viscusi and co-author Caroline Cecot recently explored the question of judicial review of BCAs, and reported that challengers have three ways to obtain review: 1) authorization for the use of BCA under a specific statutory mandate; 2) adequacy of a BCA in the context

⁸⁶ BEAULIER AND SUTTER, *supra* note 62 at 9. The AEA researchers also claim that additional “co-costs” need to be added into EPA’s analysis, including the “cost of abridging freedom.” *Id.* at 31-32.

⁸⁷ *Michigan v. EPA*, 135 S. Ct. 2699, 2711 (2015).

⁸⁸ *See* *EDF v. Thomas*, 627 F.Supp. 566, 571-72 (D.D.C. 1986) (ordering OMB not to interfere with EPA ability to meet statutory or judicially ordered guidelines, but not treating Exec. Order No. 12,291 as bestowing legally enforceable rights on challengers). In addition, Exec. Order No. 12,866 Sec. 10 makes clear that it “does not create any right or benefit, substantive or procedural, enforceable at law or equity,” *supra* note 22.

⁸⁹ *See* *Vermont Yankee v. NRDC*, 435 U.S. 519, 543 (1978) (holding that “this much is absolutely clear . . . Absent constitutional constraints or extremely compelling circumstances, the administrative agencies should be free to fashion their own rules of procedure, and to pursue methods of inquiry capable of permitting them to discharge their multitudinous duties.”) (citation omitted) (internal quotes omitted).

⁹⁰ Caroline Cecot and W. Kip Viscusi, *Judicial Review of Agency Benefit-Cost Analysis*, 22 *GEO. MASON L. REV.* 575, 575 (2015).

of rationality review of agency action; or 3) indirect implication of a BCA as part of a broader legal challenge.⁹¹ The second or third cases may apply here. Cecot and Viscusi catalogue a number of cases in an appendix, suggesting this review is often available, though courts in general may only be “comfortable evaluating BCAs in light of statutory guidance.”⁹²

Despite the general aversion of courts to engage in “Monday morning quarterbacking” (i.e. second-guessing) of substantive agency decisions,⁹³ some scholars have openly called for a “common law of cost-benefit analysis,” where courts have freer rein to wade into “regulatory questions about cost-benefit analysis” and methodology, in order to give agencies “a reason to take cost-benefit analysis seriously” and attempt to “bring about ‘net benefits’ through judicial review.”⁹⁴

D. Four Rejoinders to MATS Critics

Even if the critiques of the MATS RIA must be answered on the merits, there are at least four reasons why EPA’s treatment of co-benefits in the MATS rulemaking should withstand substantive judicial review. First, the idea that Section 110 and Section 112 programs are mutually exclusive regulatory avenues is not legally supportable. Second, several federal appeals courts have stressed the importance of full accounting for co-benefits in regulatory decision-making. Third, in the absence of clear statutory directives, BCA methodological judgments fall well within the bounds of agency discretion. And finally, the interconnectedness of air quality regulation means that cross-pollutant impacts are in practical terms unavoidable.

⁹¹ *Id.* at 576-77.

⁹² *Id.* at 608.

⁹³ *See Vermont Yankee*, 435 U.S. at 547.

⁹⁴ Michael Abramowicz, *Toward a Jurisprudence of Cost-Benefit Analysis*, 100 MICH. L. REV. 1708, 1735, 1736, 1738, 1741 (2002) (sharing an optimistic perspective about the constructive potential of litigation to aid the search for maximized net benefits).

1) *The Clean Air Act Does Not Preclude PM Co-Benefits*

It is important to note that MATS critics – at least those presently known to the author – have not advanced actual economic studies proving that Section 110’s ambient air quality programs would be a more economically efficient means of achieving PM-related health benefits than MATS. What they have offered is simple reasoning from the breadth of regulation, or “straightforward economic analysis.”⁹⁵

But even if rigorous studies had proven this point, critics openly acknowledge that under *Whitman v. American Trucking* and CAA Section 110, cost is explicitly *not* to be considered in setting ambient air quality standards.⁹⁶ In other words, the EPA is not legally permitted to pursue the sort of cost-engineering that its critics expect it to engage in. Comparative cost-effectiveness studies between Sections 110 and 112 would likely be an interesting academic exercise, but under current law, they would be only that. EPA is, however, now required to consider costs at all stages of its Section 112 decision-making under *Michigan*, costs that were analyzed in depth in the MATS RIA and found to be worth incurring, in the interests of society as a whole.

Also, critics seem to suggest a false choice between the two regimes, as if EPA can only have an impact on PM concentrations (directly or coincidentally) through at most one regulatory channel. Neither Section 110 nor Section 112 require exclusivity, in that EPA is not forced to pick only one avenue through which regulations can have an *impact* on PM, even if the two sections have differing objectives. In particular, Section 112(d)(7) specifically makes clear that HAP requirements do not “diminish or replace” any “other applicable requirement” under the Clean Air Act.⁹⁷

2) *Court Support for Action Based on Ancillary Effects*

Livermore and Revesz, as well as major power producers Calpine and Exelon in their *Michigan v. EPA* Supreme Court briefs, have pointed to three instances

⁹⁵ DUDLEY ET AL., *supra* note 61 at 8.

⁹⁶ Dudley, *supra* note 57 at 170 (acknowledging *Whitman v. Am. Trucking Ass’ns*, 531 U.S. 457 (2001)).

⁹⁷ 42 U.S.C. § 7412(d)(7) (2015).

where federal appeals courts encouraged agency consideration of and action based on ancillary effects as part of rationality review. First, a portion of the D.C. Circuit's opinion in *American Trucking* that was not subsequently addressed by the Supreme Court involved ancillary impacts. "[I]n that case, the court accepted the challengers' argument that EPA should have considered 'the health *benefits* of tropospheric ozone as a shield from . . . the sun" in their Section 110 analysis.⁹⁸ Second, the Ninth Circuit in *Center for Biological Diversity v. NHTSA*⁹⁹ reversed the "agency for quantifying ancillary costs of fuel economy standards (the impact on vehicle sales and employment) but not quantifying ancillary environmental benefits."¹⁰⁰ And third, the D.C. Circuit in *Competitive Enterprise Institute v. NHTSA*¹⁰¹ reversed the "agency for failing to consider whether benefits of fuel economy standards outweigh ancillary costs in terms of lives lost due to smaller vehicles."¹⁰² Though these authorities do not directly pertain to Section 112, they do indicate that courts see the value of coincidental effects as an important consideration and that co-benefits can be a permissible basis for moving the regulatory process forward.

3) *BCA Methodology Falls Well Within Agency Discretion*

In addition to legal arguments rooted in *Chevron* deference, a rather persuasive policy case can be made for leaving the scientific details of BCA to the realm of agency discretion. This stems from the role of BCA in the regulatory review process – as a requirement "by executive order that [BCAs] be carried out for all proposed major regulations" but in terms of their conclusions should be treated as "advisory rather than determinative."¹⁰³ This approach, explicitly advanced in

⁹⁸ Livermore and Revesz, *supra* note 67 at 1250 (citing *Am. Trucking Ass'ns v. EPA*, 175 F.3d 1027, 1051-52 (D.C. Cir. 1999)) (emphasis added).

⁹⁹ *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1193-1203 (9th Cir. 2008).

¹⁰⁰ Brief for Industry Respondents Calpine Corp., Exelon Corp., National Grid Generation LLC, and Public Service Enterprise Group, Inc. at 37, *Michigan v. EPA*, 135 S. Ct. 2699 (2015) (No. 14-46, 14-47, 14-49), 2015 WL 797452.

¹⁰¹ *Competitive Enter. Inst. v. Nat'l Highway Traffic Safety Admin.*, 956 F.2d 321, 327 (D.C. Cir. 1992).

¹⁰² Brief for Industry Respondents, *supra* note 100 at 37.

¹⁰³ Carlin, *supra* note 7 at 23.

Executive Order 12,866, also comports with the consensus approach of Professor Arrow and his colleagues:

Benefit-cost analysis should be required for all major regulatory decisions, but agency heads should not be bound by a strict benefit-cost test. Instead, they should be required to consider available benefit-cost analyses and to justify the reasons for their decision in the event that the expected costs of a regulation far exceed the expected benefits.¹⁰⁴

Respected judicial observers agree. Judge Richard Posner, contributing to a compilation of papers on benefit-cost analysis, concluded that the ultimate test of a BCA regarding societal efficiency is “whether its use improves the performance of government in any sense of improvement that the observer thinks appropriate.”¹⁰⁵ Going further, he shared that “in my view the ultimate criterion should be pragmatic; we should not worry whether cost-benefit analysis is grounded in any theory of value. We should ask how well it serves whatever goal we have.”¹⁰⁶

EPA’s RIA in MATS served as a check that agency action served overall societal efficiency, the longstanding goal of OIRA review. It was not designed to meet any particular statutory cost-consideration requirement (as there were none at the time), nor did the Supreme Court retroactively impose a BCA requirement on the agency. Since the final RIA anticipated and responded to many of the challengers’ critiques – including the important observation ambient air quality standards “are not set at a level of zero risk”¹⁰⁷ below which there are no health hazards – the agency noted and responded to concerns about its methodologies even though the benefit-cost analysis was for regulatory review, not statutory adherence.

Though EPA’s RIA may be attacked on the grounds that going “against scientific evidence or reason” is a flaw “that can topple an agency’s BCA under certain circumstances” – and the *Michigan* petitioners may make that claim with respect to low-level PM health effects – it is hard to believe that the EPA’s choice of

¹⁰⁴ ARROW ET AL., *supra* note 60 at 1-2.

¹⁰⁵ Richard A. Posner, *Cost-Benefit Analysis: Definition, Justification, and Comment on Conference Papers*, 29 J. LEGAL STUD. 1153, 1155-56 (2000).

¹⁰⁶ *Id.* at 1156.

¹⁰⁷ 2011 MATS RIA, *supra* note 4 at ES-4.

extrapolation method “bears no rational relationship to the characteristics of the data to which it is applied.”¹⁰⁸ This challenge, however, would be proposing that despite statutory silence EPA is not allowed to make straight-line assumptions in the face of scientific uncertainty, not allowed to assume that a measured trend continues past the point of presently-available data.

4) *Interconnectedness of Air Regulations Explains Multiple PM Effects*

Finally, and on a more general level, the claim that a series of EPA regulations are repeatedly and intentionally targeting PM reductions and operating beyond statutory authority is an argument that assumes facts not in evidence. Should the *Michigan* petitioners make this argument, despite clear agency statements that the decision to take regulatory action was not predicated on these ancillary benefits,¹⁰⁹ and the Supreme Court’s acceptance of that position,¹¹⁰ they would be asking the D.C. Circuit to rule that regardless of those facts the *real* reason for EPA regulatory action was to reduce PM below levels required by the ambient air quality program.

As a political narrative this idea has obvious appeal to EPA opponents. But in the absence of clear evidence, it lacks substantial legal or factual justification. Air quality regulations often have impacts on co-pollutants, and Section 112 reflects that simple reality.¹¹¹ Congress specifically envisioned that air regulations would have collateral impacts when they observed that under Section 112 EPA “would consider the benefits which result from control of air pollutants that are not listed but the emissions of which are, nevertheless, reduced by control technologies or practices necessary to meet the prescribed limitation.”¹¹² That sort of indirect impact on

¹⁰⁸ Cecot and Viscusi, *supra* note 90 at 592, 598-99.

¹⁰⁹ National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units, 77 Fed. Reg. 9304, 9320 (Feb. 16, 2012) (commonly known as the MATS Rule). *See also* *Michigan v. EPA*, 135 S. Ct. 2699, 2706 (2015) (describing EPA’s position).

¹¹⁰ *See Michigan*, 135 S. Ct. at 2706.

¹¹¹ *See* 42 U.S.C. § 7412(d)(7) (2015). *See also supra* text accompanying note 97.

¹¹² S. Rep. No. 101-228, at 172 (1989) (quoted in Inst. for Policy Integrity, *supra* note 56 at 9).

another pollutant is precisely what happened in the MATS rulemaking with respect to particulate matter.

V. Conclusion

Unless directed otherwise by statute, considering co-benefits is a sound and longstanding federal agency practice entitled to respect as the product of expert reasoning, both generally and as employed in the MATS rulemaking. Over the past three and a half decades of regulatory impact analyses, the consensus view of economists has been and continues to be that *all* benefits of agency action – both direct and indirect – should be considered and monetized to the greatest extent possible. The rhetorical frame taken up by MATS critics appears plausible at first glance, though upon further examination it falls short of being legally persuasive in light of statute, case law, the need to respect agency expertise, and the particular facts and Congressional intent at issue in MATS.