JUDICIAL REVIEW OF AGENCY BENEFIT-COST ANALYSIS

Caroline Cecot[*] *& W. Kip Viscusi*[**]

INTRODUCTION

> *[W]hen an agency decides to rely on a cost-benefit analysis as part of its rulemaking, a serious flaw undermining that analysis can render the rule unreasonable.*[1]

> *However, we would be reluctant to seize upon a single apparently erroneous datum in a very complex rulemaking and announce that the error undermines the entire rule . . . .*[2]

Under the Administrative Procedure Act ("APA"), federal courts have an obligation to set aside an agency action that is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law."[3] In essence, the APA tasks courts with ensuring that federal agency action is reasonable—or rather, that agencies base their actions on relevant and reliable data and articulate a rational connection between the evidence and their actions.[4] As more agencies use benefit-cost analysis ("BCA") to justify their rulemakings, a court's duty to ensure that an agency's action is reasonable often requires the judges to evaluate the reasonableness of agency BCAs.

Since 1981, federal agencies have been required to conduct BCA as part of a regulatory impact analysis for all significant regulatory actions pursuant to executive order.[5] BCA is a decision-making tool that allows

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[*] Postdoctoral Research Scholar in Law and Economics, Vanderbilt University.

[**] University Distinguished Professor of Law, Economics, and Management, Vanderbilt University. This Article was prepared for Administration Unbound? Delegation, Deference, and Discretion, sponsored by George Mason University School of Law's Law & Economics Center, September 12, 2014. The authors thank Michael Greve, Dina Mishra, and Kevin Stack for careful and thoughtful comments on a draft of the paper. The authors also thank conference participants and attendees for helpful comments.

[1] Nat'l Ass'n of Home Builders v. EPA, 682 F.3d 1032, 1040 (D.C. Cir. 2012).

[2] Natural Res. Def. Council, Inc. v. Herrington, 768 F.2d 1355, 1418 (D.C. Cir. 1985).

[3] 5 U.S.C. § 706(2)(A) (2012). Most federal circuits view judicial review under the substantial evidence test as essentially the same as the review under the arbitrary or capricious test. *See infra* Part III.A.

[4] Balt. Gas & Elec. Co. v. Natural Res. Def. Council, Inc., 462 U.S. 87, 105 (1983); Motor Vehicle Mfrs. Ass'n of the United States, Inc. v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983).

[5] Although previous presidents required some assessment of costs of proposed regulatory actions, President Reagan first formalized this requirement in Executive Order 12,291. Exec. Order No. 12,291, 46 Fed. Reg. 13,193, 13,193-94 (Feb. 19, 1981). This executive order was replaced by President Clinton's Executive Order 12,866, which modified some of the requirements slightly. Exec. Order No.

regulators to identify welfare-maximizing policies by considering the expected benefits and costs of the policies if implemented.[6] BCA forces regulators to explicitly list, quantify, and, when possible, monetize the expected benefits and costs of various regulatory alternatives and then pick the regulatory alternative that maximizes net benefits, subject to statutory constraints.[7] In this way, government agencies can prioritize regulatory interventions and promulgate regulations that produce the greatest net benefits for society when their statutory mandates allow them to do so. Though not without controversy, BCA serves as the analytical framework for the design and evaluation of modern federal regulatory policy.[8]

Because BCA is prevalent in the agency context—whether the agency relies on the BCA or not—courts are increasingly being asked to review the agency's use of BCA either directly or indirectly in the context of reviewing the agency's decision making. In many respects, the potential scope of this judicial review is similar to that of the review undertaken by the U.S. Office of Management and Budget ("OMB") as part of the regulatory oversight process.[9] However, unlike the OMB review procedure, in which OMB approval of the regulation is required before a regulation can be issued, there is no comparable requirement for judicial review and approval of regulations. Rather there must be some legal challenge involving the regulation and its BCA to trigger a judicial review.

The challenges that require a reviewing court to evaluate an agency's use of BCA come in three general varieties. First, the reviewing court may be asked to determine whether the agency was authorized to rely on a BCA given its statutory mandate.[10] Or, instead, the court may have to determine whether the agency was statutorily obligated to employ BCA to justify its rulemaking.[11] In this context, the reviewing court examines the agency's statutory mandate and determines the role that BCA is allowed or required to play in the agency's decision making, employing guidance from the U.S. Supreme Court.

Second, a reviewing court may have to evaluate the adequacy of an agency's BCA in light of the agency's statutory mandate. These challenges

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12,866, 58 Fed. Reg. 51,735, 51,735 (Oct. 4, 1993). President Obama supplemented President Clinton's executive order in 2011. Exec. Order No. 13,563, 76 Fed. Reg. 3821, 3821 (Jan. 21, 2011). A significant regulatory action is defined as one that is likely to result in a rule that has an annual effect on the economy of $100 million or more or raises novel legal or policy issues, among other things. Exec. Order No. 12,866, 58 Fed. Reg. at 51,738.

6 For a detailed description of BCA and its philosophical origins as a decision procedure, see MATTHEW D. ADLER & ERIC A. POSNER, NEW FOUNDATIONS OF COST-BENEFIT ANALYSIS 1 (2006).

7 *Id.* at 2.

8 CASS R. SUNSTEIN, THE COST-BENEFIT STATE: THE FUTURE OF REGULATORY PROTECTION, at xi (2002).

9 Exec. Order No. 12,291, 46 Fed. Reg. 13,193, 13,196-98 (Feb. 19, 1981).

10 *E.g.*, Whitman v. Am. Trucking Ass'ns, 531 U.S. 457, 462 (2001).

11 *E.g.*, Am. Textile Mfrs. Inst., Inc. v. Donovan, 452 U.S. 490, 494 (1981).

to the quality of the agency's BCA often revolve around whether the agency sufficiently considered all reasonable—or statutorily mandated—factors in its BCA.[12] The court may also review the underlying assumptions or methodology in the BCA, including the agency's choice of model for a particular phenomenon[13] or choice of the discount rate when evaluating future costs or benefits.[14] The court may also analyze whether the agency provided sufficient explanation of the BCA's scope or methodology to provide adequate opportunity for notice and comment and substantive judicial review.[15]

Finally, a reviewing court may use an agency's BCA to evaluate the agency's regulation even where the agency did not rely on the BCA or take into account the implications of the BCA in its policy decision. These are not direct challenges to the BCA, but the BCA is indirectly implicated as relevant evidence that was before the agency when the agency made the challenged decision. BCA is often performed pursuant to executive order and becomes part of the administrative record even when the agency chooses not to rely on it.[16] The reviewing court may highlight aspects of the BCA to either support the ultimate agency decision[17] or cast doubt on the agency's reasoning and arguments.[18]

This Article evaluates judicial review of agency BCA by examining a substantial sample of thirty-eight judicial decisions on agency actions that implicate BCA. Some scholars have discussed the desirability of judicial review of BCA,[19] but few have closely evaluated how courts generally review these BCAs aside from discussing isolated examples.[20] This Article fills this gap in the literature by providing an overview and a critical assessment of how courts evaluate BCAs, as well as the implications of judicial review of BCAs for future regulatory policy.

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12 *E.g.*, Pub. Citizen v. FMCSA, 374 F.3d 1209, 1216 (D.C. Cir. 2004).

13 *E.g.*, Corrosion Proof Fittings v. EPA, 947 F.2d 1201, 1218-19 (5th Cir. 1991).

14 *E.g.*, Natural Res. Def. Council, Inc. v. Herrington, 768 F.2d 1355, 1412 (D.C. Cir. 1985).

15 *E.g.*, Owner-Operator Indep. Drivers Ass'n v. FMCSA, 494 F.3d 188, 202-03 (D.C. Cir. 2007).

16 *E.g.*, Nat'l Truck Equip. Ass'n v. NHTSA, 711 F.3d 662, 670 (6th Cir. 2013); R.J. Reynolds Tobacco Co. v. FDA, 696 F.3d 1205, 1220-21 (D.C. Cir. 2012), *overruled in part by* Am. Meat Inst. v. USDA, 760 F.3d 18 (D.C. Cir. 2014) (en banc).

17 *E.g.*, *Nat'l Truck Equip. Ass'n*, 711 F.3d at 670.

18 *E.g.*, *R.J. Reynolds Tobacco Co.*, 696 F.3d at 1220-21.

19 *See, e.g.*, SUNSTEIN, *supra* note 8, at xi; Michael Abramowicz, *Toward a Jurisprudence of Cost-Benefit Analysis*, 100 MICH. L. REV. 1708, 1730-38 (2002); Fred Anderson et al., *Regulatory Improvement Legislation: Risk Assessment, Cost-Benefit Analysis, and Judicial Review*, 11 DUKE ENVTL. L. & POL'Y F. 89, 90 (2000); John C. Coates IV, *Cost-Benefit Analysis of Financial Regulation: Case Studies and Implications* 24 (ECGI Law Working Paper No. 234/2014).

20 A few scholars have examined judicial review of a collection of BCAs, but even these exceptions have been narrowly focused. *See, e.g.*, Edward R. Morrison, Note, *Judicial Review of Discount Rates Used in Regulatory Cost-Benefit Analysis*, 65 U. CHI. L. REV. 1333, 1351-53 (1998) (discussing judicial review of agency choice of discount rates in BCA); Coates, *supra* note 19, at 31-85 (evaluating judicial review of the BCA of recent financial regulations).

Part I describes the mechanics of BCA and its history in agency decision making. It also discusses recent congressional movements toward increasing use of BCA in agency decision making.

Against that backdrop, the next three parts correspond to the three different contexts in which courts evaluate permissible BCA. Part II discusses the first inquiry—the contours of permissible BCA use by agencies, as defined by statutes and as interpreted by agencies and courts. This Part focuses on guidance from the Supreme Court.

Part III describes the substantive judicial review of BCA based on our sample of appellate court decisions implicating an agency's BCA. Although not an exhaustive census of all appellate cases involving BCA, this substantial sample offers a comprehensive perspective on the state of judicial review. First, this Part describes the standard of judicial review applicable to the review of agency BCAs. Then, we discuss the way courts have handled direct challenges to the adequacy of an agency's BCA, including challenges to the BCA's scope, methodology, and transparency. Overall, there are many examples of courts promoting high-quality and transparent BCA. The stringency of judicial review, however, is not consistent.

Furthermore, an agency's BCA can be implicated in litigation even if it is not directly challenged. Part IV discusses this indirect judicial review of BCA. Often, these are cases where courts have turned to well-executed BCAs to support or undermine an agency's reasoning. In these cases, although the agency has chosen not to rely on BCA, the reviewing court, when assessing the reasonableness of the agency's decision, can consider the BCA as part of the record before the agency at the time the agency made its decision.

Finally, Part V discusses the implications of the analysis for the future of regulatory policy. As agencies rely more on BCA in their decision making, challenges to BCAs will rise, and judicial review of BCA will become increasingly important. This Article's review of cases in which BCA played a central role suggests that the scope of judicial review tends to be limited to the aforementioned narrowly defined matters related to the agency's statute. However, within this narrow range it appears that the role of judicial review to date has been constructive—highlighting when BCA should be more comprehensive or should play a more instrumental role in agency decision making. The stakes are high, as BCA is generally only performed when proposed regulations are thought to have substantial economic impacts. Regulatory reform legislation could, of course, expand this role. Whether such an expansion would be effective depends in part on the competence of judicial review in dealing with BCA matters—which this Article's analysis is intended to illuminate.

Ultimately, we hope that this Article's examination of the state of judicial review of BCA will trigger informed discussion about the proper role of courts in reviewing agency BCAs. Armed with this information, scholars can more effectively evaluate the impact of such judicial checkpoints on the

use of BCA in agency decision making and assess whether shifting more regulatory oversight authority to the courts would be an effective approach to fostering more welfare-enhancing policies.

I. HISTORY OF AGENCY BENEFIT-COST ANALYSIS

In federal agencies, BCA has grown from a rudimentary prioritization method to a sophisticated analysis tool that enables agencies to choose among various regulatory alternatives in an effort to increase social welfare. In this Part, we review the history of the use of BCA in the federal agencies.

Most people engage in some form of benefit-cost balancing when making everyday decisions.[21] Among available options, rational persons identify the option that they expect will maximize their happiness, qualitatively considering a host of factors that map to potential costs or benefits of choosing each option. They then make what they think is the best decision given the information before them.

This individual decision-making procedure roughly maps to BCA as implemented by government agencies, although the latter may be more explicit or rigorous than the former. BCA is a decision-making tool through which regulators explicitly list, quantify, and, when possible, monetize the expected benefits and costs of various regulatory alternatives and then pick the regulatory alternative that maximizes net benefits, subject to statutory constraints. For example, the Federal Motor Carrier Safety Administration ("FMCSA") of the U.S. Department of Transportation ("DOT") may consider a rule that would limit the number of hours that a commercial motor vehicle driver may drive.[22] If the FMCSA decides to reduce the number of daily driving hours, then relevant industries would have to hire more drivers to complete deliveries, and these costs would ultimately be passed down to consumers as increased prices for truck-delivered goods. On the other hand, a reduction in daily driving hours could reduce the number of crashes attributable to driver fatigue. The agency could convert these changes in crash risks into monetary measures so that the agency could compare these

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[21] Judge Williams of the D.C. Circuit has previously cited to Benjamin Franklin's description of reasoned decision making when describing the basic methodology of BCA. *See* Int'l Union, United Auto., Aerospace & Agric. Implement Workers of Am., UAW v. OSHA, 938 F.2d 1310, 1321 (D.C. Cir. 1991) ("Thus, cost-benefit analysis entails only a systematic weighing of pros and cons, or what Benjamin Franklin referred to as a 'moral or prudential algebra.'").

[22] *See* FED. MOTOR CARRIER SAFETY ADMIN., DEP'T OF TRANSP., RIN 2126-AB26, 2010-2011 HOURS OF SERVICE RULE REGULATORY IMPACT ANALYSIS 1-1 (2011), *available at* http://www.regulations.gov/#!documentDetail;D=FMCSA-2004-19608-28406 (analyzing similar regulatory alternatives).

expected benefits to the expected costs.[23] The agency could then decide to only impose a reduction in daily driving hours if society's value for the resulting reduction in crashes is greater than the extra cost of consumer goods. In other words, if the agency is guided by the BCA, it may only promulgate the rule if society, on net, would benefit from the rule. In this way, the BCA procedure allows government agencies to prioritize regulatory interventions and take into account the tradeoffs inherent in rulemaking, focusing efforts on regulations that produce net benefits for society when the relevant statutory mandates allow the agencies to do so.[24] In the case of the FMCSA, there is no legal prohibition against basing policies on the results of the BCA.[25]

The U.S. Army Corps of Engineers and the U.S. Department of Interior's Bureau of Reclamation have used some form of BCA to assess water-resource projects since the mid-1940s.[26] These agencies were required by law to justify their policies using a benefit-cost test.[27] The agencies weighed the costs of the public works projects against principal categories of benefits that included components such as navigation, flood control, irrigation, electric power, municipal and industrial water supply, and recreation.[28]

Broadly based requirements of economic assessments of regulations began with the cost components of a BCA. The origins of regulatory impact analysis in federal agency decision making can be traced back to the economic cost and inflationary impact analysis under President Nixon and President Ford,[29] which were followed by a cost-effectiveness requirement

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23 *See* DEP'T OF TRANSP., REVISED DEPARTMENTAL GUIDANCE 2013: TREATMENT OF THE VALUE OF PREVENTING FATALITIES AND INJURIES IN PREPARING ECONOMIC ANALYSES 1, 4 (2013), *available at* http://www.dot.gov/regulations/economic-values-used-in-analysis (discussing the DOT's values for reducing fatalities and injuries for use in economic analyses).

24 BCA also guides agencies to consider all relevant factors; can reduce cognitive biases in decision making; and can promote democratic goals by making decision making more transparent. *See Statement of Christopher DeMuth*, *in* AMERICAN ECONOMIC POLICY IN THE 1980S, at 504, 505–11 (Martin Feldstein ed., 1994). Of course, there are challenges associated with BCA as some impacts are difficult to quantify and monetize. In addition, scholars worry that BCA is susceptible to "managing" to produce favorable outcomes. For more discussion on the criticisms of BCA, see Coates, *supra* note 19, at 14.

25 In fact, the FMCSA did base its hours-of-service rules on BCA. The resulting legal challenges are discussed in Parts III and IV, *infra*.

26 RICHARD L. BERKMAN & W. KIP VISCUSI, DAMMING THE WEST 6 (1973); OTTO ECKSTEIN, WATER-RESOURCE DEVELOPMENT: THE ECONOMICS OF PROJECT EVALUATION 179 (1958). *See also* PETER H. SCHUCK, WHY GOVERNMENT FAILS SO OFTEN: AND HOW IT CAN DO BETTER 45-46 (2014) (dating the birth of BCA to a requirement imposed by Congress in the 1930s).

27 ECKSTEIN, *supra* note 26, at 2.

28 *Id.* at 176-78; BERKMAN & VISCUSI, *supra* note 26, at 7-8.

29 President Nixon created a Quality of Life Review process, managed by OMB, in which any agency rules pertaining to environmental quality, consumer protection, and occupational and public health and safety would be submitted to the OMB with a summary of the expected benefits and costs—but these summaries were basic. President Ford required all agencies to prepare economic impact state-

under President Carter.[30] But it was not until President Reagan issued Executive Order 12,291 in 1981 that BCA became a mandatory component of regulatory policy development.[31] For the first time, all federal executive agencies were directed to perform BCA as the analytical core of a regulatory impact analysis, on all major rules, defined as those regulations likely to have an annual effect on the economy of $100 million or more.[32] The executive order also increased agency accountability to the White House by formalizing a system of review of agency action headed by the Office of Information and Regulatory Affairs ("OIRA") within OMB that continues in substantial part to the present.[33] The shifting of the regulatory oversight process to OMB at the start of the Reagan administration bolstered the leverage of the oversight group given OMB's pivotal budgetary role.[34]

Although the requirements in President Reagan's executive order may have been envisioned to achieve conservative, deregulatory goals, BCA in practice did not appear to have a substantial deregulatory effect.[35] This may have been partly because the initial rudimentary analyses induced neither significant delay nor significant reliance. But at least in some instances, BCA swayed the agency in the opposite direction, encouraging the adoption of more stringent regulatory standards than would otherwise be considered.[36] And, importantly, Executive Order 12,291 made agencies comfortable with performing BCA—and gave the OMB and the White House information on the benefits and costs of significant regulatory actions, enabling them to encourage regulatory agencies to promulgate more cost-beneficial policies.[37]

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ments, discussing the costs of each proposed rule. Exec. Order No. 11,821, 39 Fed. Reg. 41,501, 41,501-02 (Nov. 29, 1974) (as amended by Exec. Order No. 11,949, 42 Fed. Reg. 1017, 1017 (Jan. 5, 1977)). President Ford's regulatory review efforts, as well as those of President Carter, were administered by the Council on Wage and Price Stability, an agency within the Executive Office of the President. The Council was abolished at the end of the Carter administration, and the regulatory oversight staff was shifted back to OMB.

30 President Carter required agencies to consider direct and indirect effects of proposed regulations and to choose the least burdensome of acceptable alternatives when possible in Executive Order 12,044. Exec. Order No. 12,044, 43 Fed. Reg. 12,661, 12,661 (Mar. 24, 1978).

31 Exec. Order No. 12,291, 46 Fed. Reg. 13,193, 13,193 (Feb. 19, 1981).

32 *Id.* Later executive orders refer to these as "significant" rules.

33 *Id.* at 13,196-98.

34 Demuth, *supra* note 24, at 505.

35 *See id.* at 508-09.

36 One example is the Reagan administration's imposition of a stricter standard for phasing out lead in gasoline than initially thought warranted, based on the results of the BCA. *See id.* at 508 ("A very fine piece of analysis persuaded everyone that the health harms of leaded gasoline were far greater than we had thought, and we ended up adopting a much tighter program than the one we had inherited."). For more information about the BCA and the resulting standard, see Albert L. Nichols, *Lead in Gasoline*, *in* ECONOMIC ANALYSIS AT EPA: ASSESSING REGULATORY IMPACT 49, 49–86 (Richard D. Morgenstern ed., 1997).

37 *See* Demuth, *supra* note 24, at 506.

Hence, when President Clinton took office, he did not dismantle the growing stronghold of BCA in federal agency decision making. Instead, he issued a new executive order, Executive Order 12,866, that changed the atmospherics of the requirements by stressing their welfare-enhancing role and noting the importance of considerations that could not be monetized.[38] However, Executive Order 12,866 retained OMB's institutional role as well as the basic features of the prior system. Federal agencies were still required to "assess all costs and benefits of available regulatory alternatives" and "select those approaches that maximize net benefits."[39] This executive order remains in place, supplemented by President Obama's Executive Order 13,563[40] and supported by the Unfunded Mandates Reform Act of 1995, which also requires agencies to evaluate the benefits and costs of covered rulemakings.[41]

Roughly speaking, the agency is responsible for conducting its own BCA, but there are some internal and external quality checkpoints. Most agencies have technical guidance documents that describe how the agency approaches its BCA.[42] In addition, OIRA has issued guidance documents for agency BCA,[43] though in practice, agency procedures and relevant estimates widely vary.[44] Each agency then submits the BCA accompanying its draft regulations to OIRA, which reviews the agency's compliance with the executive order and ensures that the proposed regulations are consistent with the president's overall policy objectives.[45] Each year, OIRA completes hundreds of regulatory reviews,[46] possibly recommending that the agency

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38 Exec. Order No. 12,866, 58 Fed. Reg. 51,735, 51,735 (Oct. 4, 1993).

39 *Id.*

40 Exec. Order No. 13,563, 76 Fed. Reg. 3821, 3821 (Jan. 21, 2011).

41 Unfunded Mandates Reform Act of 1995, Pub. L. No. 104-4, 109 Stat. 48 (1995) (relevant sections codified in 2 U.S.C. § 1532).

42 *See, e.g.*, OFFICE OF AIR QUALITY PLANNING & STANDARDS, ENVTL. PROT. AGENCY, OAQPS ECONOMIC ANALYSIS RESOURCE DOCUMENT 8-11 to 8-13 (1999), *available at* http://www.epa.gov/ttn/ecas/econdata/6807-305.pdf (BCA resource document for analyses performed by EPA's OAQPS).

43 *See, e.g.*, OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, CIRCULAR A-4, REGULATORY ANALYSIS 9-10 (2003); *see also* Memorandum from Susan E. Dudley, Adm'r, Office of Info. & Regulatory Affairs, Office of Mgmt. & Budget, & Sharon L. Hayes, Assoc. Dir. & Deputy Dir. for Sci., Office of Sci. & Tech. Policy, to the Heads of Exec. Dep'ts & Agencies, Updated Principles for Risk Analysis 10 (Sept. 19, 2007).

44 *See, e.g.*, W. Kip Viscusi, *The Value of Individual and Societal Risks to Life and Health*, *in* 1 HANDBOOK OF THE ECONOMICS OF RISK AND UNCERTAINTY 385, 435-44 (Mark J. Machina & W. Kip Viscusi eds., 2014) (demonstrating how the value of statistical life used to monetize benefits varies across and within agencies). The cost per life saved also varies widely. *See* STEPHEN BREYER, BREAKING THE VICIOUS CIRCLE: TOWARD EFFECTIVE RISK REGULATIONS 24-27 (1993).

45 Exec. Order No. 12,866, 58 Fed. Reg. 51,735, 51,738-39 (Oct. 4, 1993).

46 To search for the number of regulatory reviews for a given period of time, see Office of Info. & Regulatory Affairs, *Review Counts*, REGINFO, http://www.reginfo.gov/public/do/eoCountsSearchInit?action=init (last visited Dec. 25, 2014).

change or withdraw its proposed rule.[47] Although there are no requirements for peer review of agency BCA or other science-based documents, the OMB also encourages agencies to seek out peer review in order to increase the quality and credibility of the analyses supporting their decision making.[48]

Despite the internal guidance and OIRA review, agency compliance with the spirit and letter of the executive order is not high. An analysis of seventy-four agency BCAs that span the Reagan, first Bush, and Clinton administrations revealed that many did not provide information on net benefits and policy alternatives.[49] While all BCAs provided at least some information on costs, a much smaller proportion of BCAs in each administration quantified, much less monetized, benefits.[50] Although these statistics do not directly shed light on the quality of the BCAs, they imply that, in practice, at least some BCAs are not as useful for determining whether regulation would produce net benefits or whether the chosen policy is welfare-maximizing given available alternatives. And even those BCAs that provide estimates of benefits and costs may have deeper quality issues—they may be missing important categories of costs or benefits, or the underlying assumptions may be faulty. The usefulness of BCA in agency decision making hinges on the quality of the BCA; a poor-quality BCA is unlikely to foster rational policy decisions.

Due to the increasing agency reliance on BCA and the importance of ensuring high-quality BCA, it is not surprising that challenges to the underlying analyses often appear in litigation. On review, a BCA becomes relevant in three basic ways. First, the courts could be asked to determine whether an agency permissibly relied on a BCA as a basis for its rulemaking. Second, the courts could be asked to review the adequacy of the BCA—acting as an additional quality checkpoint on the analysis. And finally, the courts could use the BCA, present in the agency record, as evidence either for or against the adopted final rule, depending on the persuasiveness of the analysis. The next Part discusses the first of these judicial inquiries, outlining the contours of BCA permissibility given the relevant statutory language. The remaining two inquiries are discussed in detail in Parts III and IV.

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47 For a more detailed overview of the OIRA review process, see U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-03-929, OMB'S ROLE IN REVIEWS OF AGENCIES' DRAFT RULES AND THE TRANSPARENCY OF THOSE REVIEWS 29-38 (2003), *available at* http://www.gao.gov/new.items/d03929.pdf.

48 *See* Final Information Quality Bulletin for Peer Review, 70 Fed. Reg. 2664, 2665-66 (Jan. 14, 2005).

49 Robert W. Hahn & Patrick M. Dudley, *How Well Does the U.S. Government Do Benefit-Cost Analysis?*, 1 REV. ENVTL. ECON. & POL'Y 192, 192–211 (2007).

50 *Id.* at 199, 203.

II. PERMISSIBILITY OF AGENCY BENEFIT-COST ANALYSIS

As discussed previously, BCA can be a useful tool in agency decision making. Despite the executive order requirements, an agency can only rely on a BCA as the basis for its regulation if allowed to do so by the relevant statutory provision it is enforcing. Sometimes the enabling legislation *requires* BCA; one such example is the instruction to mitigate unreasonable environmental effects under the Federal Insecticide, Fungicide, and Rodenticide Act.[51] In other instances, statutory provisions, such as provisions governing the establishment of national ambient air-quality standards under the Clean Air Act ("CAA"), *prohibit* an agency's reliance on BCA in selecting regulatory policies.[52] In these instances, a regulatory reform law enacting a substantive supermandate to override these provisions to either permit or require BCA would be needed for the agency to be able to base its policies on a BCA test.

But, many statutes are not explicit about whether they require, permit, or prohibit BCA.[53] An inquiry into the contours of BCA permissibility requires an examination of U.S. Supreme Court decisions on this issue. In 1981, the Court first shed light on the permissibility of benefit-cost balancing in *American Textile Manufacturers Institute, Inc. v. Donovan*.[54] Representing the interests of the cotton industry, the petitioners argued that the Occupational Safety and Health Act of 1970 required the Occupational Safety and Health Administration ("OSHA") to engage in benefit-cost analysis when promulgating standards under § 6(b)(5).[55] In fact, the statute directed OSHA to set a standard that would adequately protect employees "*to the extent feasible*, on the basis of the best available evidence."[56] The Court held that this language did not require BCA, but instead required feasibility analysis, wherein OSHA must set the standard at the most protective level that it determines to be technologically and economically "capable of being done."[57]

Despite the Court's refusal to find a *requirement* for BCA implicit in that statutory language, the Court's decision did not necessarily dissuade

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51 7 U.S.C. § 136(bb) (2012) (definition of unreasonable adverse effect on the environment). Other examples include the Toxic Substances Control Act, 15 U.S.C. § 2605(c)(1) (2012); the Energy Policy and Conservation Act, 42 U.S.C. § 6295(o)(2)(B)(i) (2012); and the Safe Drinking Water Act, 42 U.S.C. § 300g-1(b)(3)(C)(i) (2012).

52 42 U.S.C. § 7409(b) (2012). Other examples include the decision to list a species under the Endangered Species Act, 16 U.S.C. § 1533(b)(1)(A) (2012).

53 For an overview of statutory variants on the consideration of costs, see SUNSTEIN, *supra* note 8, at 12-16.

54 452 U.S. 490 (1981).

55 *Id.* at 506.

56 *Id.* at 508 (quoting 29 U.S.C. § 655(b)(5)) (internal quotation marks omitted).

57 *Id.* at 509 (internal quotation marks omitted).

agencies from choosing to employ BCA when administering statutes with ambiguous language. In particular, the Supreme Court decided *Chevron v. Natural Resources Defense Council, Inc.* ("*Chevron*")[58] only a few years later, establishing a more deferential two-step procedure for judicially reviewing the permissibility of agency action going forward.[59] First, *Chevron* directed courts to determine whether the relevant statutory language was clear and on point using traditional tools of statutory interpretation.[60] If the statutory language were clear, the agency would have to follow Congress's unambiguously expressed instruction.[61] If Congress's intentions were unclear and the language were open to multiple interpretations, then in step two the court would defer to the agency's interpretation as long as the interpretation was permissible and not foreclosed by the statutory language.[62] The *Chevron* method was to give more leeway to the agency, acknowledging its interpretative mandate from Congress to implement the statute and its relative expertise in regulatory affairs as compared to the courts.[63]

In 2001, however, the Supreme Court implied in *Whitman v. American Trucking Ass'ns* ("*American Trucking*")[64] that it would not find authorization for BCA implicit in ambiguous statutory language.[65] Under § 109(b) of the CAA, the U.S. Environmental Protection Agency ("EPA") was directed to set national ambient air-quality standards that were "requisite to protect the public health" with "an adequate margin of safety."[66] Writing for the majority, Justice Scalia found it "fairly clear that this text does not permit the EPA to consider costs in setting the standards"—but supported this view by applying statutory canons of construction and using contextual clues from the rest of the CAA.[67] In particular, Justice Scalia found it telling that certain other provisions of the statute explicitly allowed the consideration of costs, suggesting that congressional silence in the challenged provision with respect to the consideration of costs was intentional in this case.[68]

A few years later, the Supreme Court was again asked to evaluate whether the EPA could use BCA in its decision making, but this time the challenged provision was in the Clean Water Act ("CWA"). In *Entergy Corp. v. Riverkeeper, Inc.*,[69] the Court held that the section instructing the

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58 467 U.S. 837 (1984).

59 *Id.* at 842-43.

60 *Id.*

61 *Id.*

62 *Id.* at 843.

63 *Id.* at 865.

64 531 U.S. 457 (2001).

65 *Id.* at 467 ("We have therefore refused to find implicit in ambiguous sections of the CAA an authorization to consider costs that has elsewhere, and so often, been expressly granted.").

66 42 U.S.C. § 7409(b)(1) (2012).

67 *Whitman*, 531 U.S. at 465-66.

68 *Id.* at 467.

69 556 U.S. 208 (2009).

EPA to set standards for cooling water intake structures that reflected "the best technology available for minimizing adverse environmental impact"[70] *did* allow BCA.[71] Justice Scalia, again writing for the majority, acknowledged that the statutory text was ambiguous and accepted the EPA's decision to employ BCA as a reasonable interpretation of the statute.[72] This time, when viewed in the context of the rest of the CWA, the congressional silence with respect to the consideration of costs did not unequivocally imply an intention to limit agency discretion.[73]

Finally, in *EPA v. EME Homer City Generation* ("*Homer City Generation*"),[74] the Court confirmed that statutory silence regarding the consideration of costs did not always imply an intention to bar such consideration—even in other provisions of the CAA.[75] In a decision written by Justice Ginsburg, the Court permitted the EPA to consider costs when promulgating regulations under the ambiguous Good Neighbor Provision of the CAA.[76] The EPA implemented the provision as follows: if the agency finds that one state's upwind emissions significantly contribute to another state's nonattainment, then it requires cost-effective reductions in emissions in the contributing state.[77] In this way, the level of emission abatement required depended on the costs associated with the reductions—and was not necessarily limited by the state's overall contribution.[78] Essentially, the EPA used cost-effectiveness analysis, a less-stringent cousin of BCA that considers the least costly means to achieve a given benefit, to determine how to allocate emissions reductions among states that contribute to their neighbors' air pollution problems.[79]

But the Court did not just concede that an evaluation of costs and benefits was permissible under this ambiguous provision of the CAA; the Court actively supported the EPA's decision to consider costs in this context, stating that it simply "makes good sense."[80] Adopting the language of an economist, the Court characterized the EPA's task as an "allocation problem"—and commended the agency for choosing an "efficient and equitable solution."[81] Although the Court's reasoning may be consistent with, or at least not in conflict with, its previous decisions, it is difficult not to get the

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70 33 U.S.C. § 1326(b) (2012).

71 *Entergy Corp.*, 556 U.S. at 226.

72 *Id.* at 219-20, 226.

73 *Id.* at 222-23.

74 134 S. Ct. 1584 (2014).

75 *Id.* at 1604.

76 *Id.* at 1609.

77 *Id.* at 1597.

78 *Id.* at 1597-98.

79 *Id.* at 1596.

80 *Homer City Generation*, 134 S. Ct. at 1607.

81 *Id.*

impression that the Court has become more receptive to the use of BCA in the thirteen years since *American Trucking* was decided.[82]

Of course, the statutory text is still the source of BCA authority. But Congress has not revisited many fundamental statutes, especially in the environmental arena, in more than thirty years.[83] As benefit-cost estimation techniques improve and as the analysis becomes less controversial, BCA is becoming the choice tool for reasoned decision making in many federal agencies.[84] Despite the static statutory language, it is possible that courts will be more likely to find that BCA is at least permissible whenever the agency has discretion to determine reasonable action. Although Executive Order 13,563 and its predecessors do not create any judicially enforceable rights,[85] their instruction that agencies adopt only regulations that pass a BCA to the extent permitted by law[86] may have contributed to a changing tide in favor of outright judicial encouragement of BCA when permissible. The signposts of this changing tide may be embedded in the Supreme Court's *Homer City Generation* decision and in the recent decisions promoting rigorous BCA of financial regulations handed down by the D.C. Circuit.[87]

There have also been movements in the federal legislature for a statutory mandate for BCA-based decision making when permissible, but no proposed bill has received sufficient traction to date. For example, in the 113th Congress, Senator Rob Portman introduced the Regulatory Accountability Act of 2013, which would require agencies to conduct BCA for all major and high-impact rules and to rely on the BCA in decision making whenever permissible by law.[88] The bill was referred to a subcommittee for consideration.[89]

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[82] In June 2015, the Supreme Court will decide another relevant issue: whether the EPA should have considered costs when it determined that regulation of electric utility steam generating units was "appropriate and necessary" under the CAA. *See* White Stallion Energy Ctr., LLC v. EPA, 748 F.3d 1222 (D.C. Cir.), *cert. granted in part sub nom.* Michigan v. EPA, 135 S. Ct. 702 (2014) (No. 14-46) (and consolidated cases). A decision against the EPA, denying the agency deference to its interpretation of the statutory direction and finding that the agency should have considered costs, would show strong support for requiring some BCA in agency decision making whenever arguably permissible, but the Court is not expected to take such a bold step.

[83] *See* Jonathan M. Gilligan & Michael P. Vandenbergh, *Accounting for Political Feasibility in Climate Instrument Choice*, 32 VA. ENVTL. L.J. 1, 5-6 (2014).

[84] SUNSTEIN, *supra* note 8, at 6-7.

[85] *See, e.g.*, Nat'l Truck Equip. Ass'n v. NHTSA, 711 F.3d 662, 670 (6th Cir. 2013).

[86] Exec. Order No. 13,563, 76 Fed. Reg. 3821, 3821 (Jan. 21, 2011) ("As stated in [Executive Order 12,866] and to the extent permitted by law, each agency must . . . propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs . . . .").

[87] *See, e.g.*, Bus. Roundtable v. SEC, 647 F.3d 1144, 1149-51 (D.C. Cir. 2011).

[88] S. 1029, 113th Cong. § 3 (2013).

[89] *S.1029 - Regulatory Accountability Act of 2013*, CONGRESS, https://www.congress.gov/bill/113th-congress/senate-bill/1029/all-actions (last visited Dec. 25, 2014).

One might also envision legislation imposing a supermandate that would override current statutory restrictions on BCA-based decision making.[90] Although such a bill has not been proposed in the most recent Congress, the Senate and the House of Representatives are considering in committee the Sound Regulation Act of 2014, which, in addition to encouraging cost-justified rules by requiring agencies to conduct BCA, would require each agency to report to Congress specific recommendations for how to lower regulatory costs by amending the statutes prohibiting BCA in rulemaking.[91] The bill, if enacted, would be a stepping-stone to eliminating statutory prohibitions on BCA.

The ramifications of such legislation for regulatory oversight in general could be substantial, as most regulatory costs are undertaken under statutes that prohibit basing policies on BCA.[92] There may even be noticeable effects on promulgated regulations in the case of procedural requirements because, unlike the executive order requirements, the legislative requirements may be subject to judicial review.[93] Hence, the scope of judicial review allowed by the legislation is an important issue for legislators to consider when deciding whether to enact such BCA mandates.[94] The next Part briefly describes the standard courts currently use to evaluate agency BCA and then highlights the nature of judicial review in practice by discussing a broad sample of relevant cases. Insights from our analysis could inform how future policymakers may want to structure their regulatory reform bills.

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90 *See* Cass R. Sunstein, *Legislative Foreword: Congress, Constitutional Moments, and the Cost-Benefit State*, 48 STAN. L. REV. 247, 270-71 (1996) (discussing different types of supermandates).

91 S. 2099, 113th Cong. § 3 (2014); H.R. 3863, 113th Cong. § 3 (2014) ("Notwithstanding any other provision of law, including any provision of law that explicitly prohibits the use of cost-benefit analysis in rulemaking, an agency shall conduct cost-benefit analyses and report to Congress the findings with specific recommendations for how to lower regulatory costs by amending the statutes prohibiting the use thereof.").

92 *See* CURTIS W. COPELAND, CONG. RESEARCH SERV., R41974, COST-BENEFIT AND OTHER ANALYSIS REQUIREMENTS IN THE RULEMAKING PROCESS 35 (2011).

93 Judicial review of environmental impact statements ("EIS")'s under the National Environmental Policy Act ("NEPA") could provide a glimpse into judicial review of procedural BCA requirements such as those considered by Congress. Pursuant to the NEPA, an agency prepares an EIS that weighs the economic and environmental costs and benefits of the proposed regulatory policy as compared to alternative policies. A brief examination of judicial review of the adequacy of an agency's EIS reveals that the review is similar to what courts do when evaluating the reasonableness of an agency's relied-upon BCA. *See* Webster v. USDA, 685 F.3d 411, 430 (4th Cir. 2012) (explaining that a court will find an EIS deficient "if its assessment of the costs and benefits of a proposed action relies upon 'misleading economic assumptions'" that "can prevent the agency from engaging in informed decisionmaking when balancing the proposed action's benefits with its environmental effects" and "can also preclude meaningful public participation 'by skewing the public's evaluation of' the action." (citation omitted) (quoting Hughes River Watershed Conservancy v. Glickman, 81 F.3d 437, 446 (4th Cir. 1996))).

94 *See* Anderson et al., *supra* note 19, at 109.

III. ADEQUACY OF AGENCY BENEFIT-COST ANALYSIS

The increase of agency BCA—whether encouraged by courts, required by Congress, promoted by the executive branch, or performed by agencies interested in adopting sound policies—makes it more likely that federal courts will see BCA in the agency record in litigation. In addition to interpreting whether the relevant statutory provision permits BCA, courts are being asked to examine the underlying reasoning and assumptions in the BCA.

This Part provides an example-focused look at judicial review of agency BCA in practice. This Article evaluated a sample of thirty-eight cases in which the court reviewed an agency's BCA. Cases were included in our database if they were identified in a series of specific searches on Westlaw.[95] We removed duplicates, pre-*State Farm* cases,[96] pre-*Chevron* cases,[97] cases subsequently overturned in relevant part, and district court decisions.[98] While this sample is certainly not a complete list of relevant cases, we believe that it is a broadly representative sample for analyzing how courts review BCA in practice. Every year, executive agencies promulgate approximately thirty non-transfer rules that are accompanied by some form of BCA.[99] Of the rules that are challenged, only some are challenged on the basis of their BCA. And then, a smaller percentage of these judicial reviews are appealed.[100] We did not expect to find many more cases that demonstrate judicial review of agency BCA during the time period for our case search.

Table 1 lists the cases included in our sample. More than half of the cases come from either the EPA or an office within the DOT. In almost 60 percent of the cases, the court upheld the agency's BCA in total—approving its scope, its assumptions, or its transparency. In about 40 percent of the cases, however, the court criticized at least some part of the BCA, sometimes aggressively, pointing out perceived flaws in the analysis. The next Section briefly reviews the standard courts use to evaluate BCA under these circumstances before discussing judicial review in practice.

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95 We used variations of searches such as "("regulatory impact analysis") & (("consider!" /s "benefit!") ("consider!" /s "cost!") ("consider!" /s "alter!"))" to focus in on cases in which the court commented on agency BCA. We also followed up on citations within relevant cases.

96 Motor Vehicle Mfrs. Ass'n of the United States v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29 (1983).

97 Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837 (1984).

98 In addition, we removed cases that focused solely on the threshold question of whether BCA is allowed by the statute. *See supra* Part II.

99 *See, e.g.*, OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, 2014 DRAFT REPORT TO CONGRESS ON THE BENEFITS AND COSTS OF FEDERAL REGULATIONS AND UNFUNDED MANDATES ON STATE, LOCAL, AND TRIBAL ENTITIES 2 (2014). This total does not include rules promulgated by independent agencies, which contribute another ten to twenty rules each year.

100 *See infra* Table 1.

A. *Standard of Review*

If an agency is allowed to weigh benefits and costs when deciding how to implement a statutory provision and the agency subsequently relies on a BCA, then a court may be asked to evaluate the BCA when it reviews the reasonableness of the agency action. Statutory requirements that the agency weigh benefits and costs could enhance this role. The level of scrutiny that a reviewing court generally applies to evaluate agency decision making is the arbitrary or capricious standard prescribed by the APA (the so-called "hard look" review).[101] Roughly speaking, the court must ensure that agency action is rationally related to the relevant evidence before the agency.

The APA's arbitrary or capricious test is generally considered to be deferential—and it may be especially so when a court evaluates the adequacy of an agency's BCA. The Supreme Court has consistently reminded courts that the scope of review is "narrow" and "a court is not to substitute its judgment for that of the agency."[102] In addition, when an agency makes "predictions, within its area of special expertise, at the frontiers of science," the reviewing court should "generally be at its most deferential."[103] In practice, a BCA is the kind of analysis that often requires an agency to make many predictions based on available scientific and technical evidence—such as, for example, predictions about the emission-reduction benefits associated with a particular air-pollution-control technology or predictions about the cost of implementing a particular workplace-safety regulation.[104] In this way, Supreme Court precedent can be read to require courts to be particularly hands off when it comes to evaluating the substance of agency

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[101] 5 U.S.C. § 706(2)(A) (2012) (stating the judicial obligation to set aside an agency action that is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law"). Some statutes require all agency decisions to be based on substantial evidence, but most courts believe that the review under these two standards is the same. *See, e.g.*, Butte Cnty. v. Hogen, 613 F.3d 190, 194 (D.C. Cir. 2010); Ace Tel. Ass'n v. Koppendrayer, 432 F.3d 876, 880 (8th Cir. 2005). In fact, in 1984, as a D.C. Circuit Judge, Justice Scalia claimed an emerging consensus within the courts of appeals that there was no real distinction between the two tests. Ass'n of Data Processing Serv. Orgs. v. Bd. of Governors of Fed. Reserve Sys., 745 F.2d 677, 684 (D.C. Cir. 1984). That said, some courts, such as the Eleventh Circuit, still hold the view that the substantial evidence test calls for stricter scrutiny. *See* Vertex Dev., LLC v. Manatee Cnty., 761 F. Supp. 2d 1348, 1359 (M.D. Fla. 2011) (citing Color Pigments Mfrs. Ass'n v. OSHA, 16 F.3d 1157, 1160 (11th Cir. 1994)). To the extent that a court evaluated an agency BCA using what it considered to be a stricter review than under the arbitrary or capricious test, we make a note for the reader. These cases are also flagged in Table 1 with a "**" in the column that indicates judicial disapproval of BCA. *See infra* Table 1.

[102] Motor Vehicle Mfrs. Ass'n of the United States v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983).

[103] Balt. Gas & Elec. Co. v. Natural Res. Def. Council, Inc., 462 U.S. 87, 103 (1983).

[104] *See, e.g.*, Ctr. for Auto Safety v. Peck, 751 F.2d 1336, 1351 (D.C. Cir. 1985) ("The agency was to identify the costs and benefits of alternative standards, measure them, and select the standard which displays the greatest net benefit. This is more easily said than done, since . . . the process was as much one of prediction as of analysis.").

BCA. Other courts have explicitly reasoned that agency determinations based on the weighing of expected benefits and costs are best left to agency expertise.[105]

That said, the arbitrary or capricious test is not without some bite, even in the context of evaluating an agency's BCA. For example, in *Motor Vehicle Manufacturers Ass'n of the United States v. State Farm Mutual Automobile Insurance Co.* ("*State Farm*"),[106] the Supreme Court stated that

> an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.[107]

In this way, the Court succinctly predicted—or influenced the development of—the current style of BCA policing by reviewing courts. Hence, courts primarily examine whether all statutory factors and other important aspects of the issue were considered in the BCA and whether the BCA is well founded in available scientific evidence.[108]

Generally speaking, if an agency relies on a BCA, the court will evaluate whether the BCA is reasonable.[109] But the reviewing court will generally not reverse "simply because there are uncertainties, analytic imperfections, or even mistakes in the pieces of the picture petitioners have chosen to bring to [the court's] attention," but rather "when there is such an absence of overall rational support as to warrant the description 'arbitrary or capricious.'"[110] Upon finding a defect in the analysis, courts look to the seriousness of the flaw and the likelihood that correcting the error will change the agency's ultimate decision.[111] Courts also consider the persuasiveness of

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105 *See, e.g.*, *id.* at 1342 ("This is especially true when the agency is called upon to weigh the costs and benefits of alternative policies, since '[s]uch cost-benefit analyses epitomize the types of decisions that are most appropriately entrusted to the expertise of an agency . . . .'" (alteration in original) (quoting Office of Commc'n of United Church of Christ v. FCC, 707 F.2d 1413, 1440 (D.C. Cir. 1983))); Nat'l Ass'n of Home Builders v. EPA., 682 F.3d 1032, 1040 (D.C. Cir. 2012) ("[W]e review such a cost-benefit analysis deferentially."); Nat'l Wildlife Fed'n v. EPA, 286 F.3d 554, 563 (D.C. Cir. 2002) (per curiam) ("[I]n view of the complex nature of economic analysis typical in the regulation promulgation process, [the petitioners'] burden to show error is high.").

106 463 U.S. 29 (1983).

107 *Id.* at 43.

108 Some of the examined BCAs were performed in the context of environmental impact statements required under NEPA. *See* discussion *supra* note 93.

109 *See* City of Portland v. EPA, 507 F.3d 706, 713 (D.C. Cir. 2007) (noting that the court "will [not] tolerate rules based on arbitrary and capricious cost-benefit analyses").

110 Ctr. for Auto Safety v. Peck, 751 F.2d 1336, 1370 (D.C. Cir. 1985).

111 *See, e.g.*, Nat'l Ass'n of Home Builders v. EPA, 682 F.3d 1032, 1040 (D.C. Cir. 2012) ("[W]hen an agency decides to rely on a cost-benefit analysis as part of its rulemaking, a serious flaw undermining that analysis can render the rule unreasonable."); *City of Portland*, 507 F.3d at 713 ("In the

the BCA as part of the evidence before the agency to determine whether the agency's chosen regulatory action was reasonable in light of this evidence.[112] The next Section provides an overview of judicial review of BCA based on an analysis of relevant cases on appeal.

B. *Empirical Examination of Judicial Review*

When an agency is allowed to rely on a BCA to implement a statutory provision and subsequently does rely on such a BCA, the BCA must be reasonable. Because of this, a reviewing court is sometimes asked to consider the adequacy of an agency's BCA in terms of its scope and quality. As previously discussed, a court reviews an agency's economic analysis deferentially, in recognition of the agency's technical expertise and Congress's intention to entrust the task of balancing the benefits and costs of policy alternatives to the agency. Despite this generally deferential view, courts have taken issue with certain BCAs. There are essentially three types of flaws that can topple an agency's BCA under certain circumstances. The first is when the scope is inadequate, often because the BCA ignores an important—or statutorily mandated—aspect of the problem. The second is when the BCA's methodology or assumptions go against scientific evidence or reason. And the third is when an agency fails to disclose the BCA's assumptions or methodology to interested parties. This Section discusses each of these flaws in turn and provides examples of relevant judicial review.

1. Scope

A BCA is most useful when it quantifies and monetizes all relevant benefits and costs of all reasonable alternatives. The agency often retains some discretion when deciding which benefits and costs are relevant and which alternatives to consider, as well as when deciding how rigorously to analyze each factor.[113] These scope and depth decisions are unavoidable in the context of conducting a BCA, and a court generally reviews these

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narrow context of this case . . . remanding this rule to the Agency based on flaws in its cost-benefit analysis would be pointless. Even were EPA to redress its alleged errors, the final rule would remain unchanged, making this the epitome of harmless error.").

[112] *See* R.J. Reynolds Tobacco Co. v. FDA, 696 F.3d 1205, 1217-18 (D.C. Cir. 2012), *overruled in part by* Am. Meat Inst. v. USDA, 760 F.3d 18 (D.C. Cir. 2014) (en banc).

[113] *See, e.g.*, Natural Res. Def. Council, Inc. v. Herrington, 768 F.2d 1355, 1417 (D.C. Cir. 1985) ("In light of the broad deference appropriately due an agency in allocating its limited resources for investigation of different aspects of a complex and highly technical regulatory problem, we refrain from holding that DOE was legally required to conduct a more thorough factual inquiry into [this aspect of the problem].").

judgments deferentially as long as the agency's decisions are reasonable.[114] Table 2 describes the scope challenges in our dataset of cases.

In some instances, however, the relevant statutory provision provides guidance on the scope (and potentially the depth) of permissible analysis.[115] The statutory language can support an agency's decision to limit the scope of its BCA. For example, in *City of Waukesha v. EPA*,[116] the EPA was required to prepare a BCA when setting a maximum contaminant level ("MCL") for uranium under the Safe Drinking Water Act ("SDWA").[117] Instead of evaluating the total benefits and costs accruing to the uranium MCL—which would include the benefits and costs arising from compliance with the MCLs at hazardous waste sites governed by the Comprehensive Environmental Response, Compensation, and Liability Act—the EPA only evaluated the benefits and costs arising from compliance under the SDWA.[118] Given the language of the SDWA's provision, the court found the EPA's decision to limit the scope of the BCA to be reasonable.[119] In addition, the statutory language can support an agency's decision to employ a less rigorous form of BCA.[120]

But, statutory language can also expand the scope of an agency's BCA. Specifically, the relevant provision may include a list of factors that the agency must consider in making its decision. In *State Farm*, the Supreme Court stated that an agency cannot "entirely fail[] to consider an important aspect of the problem."[121] A statutorily mandated factor is, "by definition . . . an important aspect of any issue before an administrative agency, as it is for Congress in the first instance to define the appropriate scope of an agency's mission."[122] Thus, if the agency relies on a BCA that fails to consider such a statutorily mandated factor, the court will invalidate the agency's action. Such was the case when the FMCSA failed to analyze in its BCA whether the electronic monitoring devices it mandated in its rule

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114 *Id.* at 1416-17.

115 In *Entergy Corp.*, the Supreme Court suggested that even the rigor of permissible BCA may depend on the specific statutory language allowing BCA. *See* Entergy Corp. v. Riverkeeper, Inc., 556 U.S. 208, 223 (2009) ("[I]t was well within the bounds of reasonable interpretation for the EPA to conclude that cost-benefit analysis is not categorically forbidden. Other arguments may be available to preclude such a rigorous form of cost-benefit analysis as that which was prescribed under the statute's former . . . standard.").

116 320 F.3d 228 (D.C. Cir. 2003).

117 *Id.* at 242-43.

118 *Id.*

119 *Id.* at 243-44.

120 Am. Mining Cong. v. Thomas, 772 F.2d 617, 632 (10th Cir. 1985) ("This language, in the context of the entire legislative history of [the relevant provision] . . . convinces us that Congress intended cost-benefit analysis, but less strict than an optimized cost-benefit analysis.").

121 Motor Vehicle Mfrs. Ass'n of the United States v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983).

122 Pub. Citizen v. FMCSA, 374 F.3d 1209, 1216 (D.C. Cir. 2004).

would harass vehicle operators.[123] In another example, the FMCSA failed to consider the impact of changing the maximum allowable driving hours on the health of drivers, also a statutorily mandated factor.[124]

Relying on the statutory language to determine the scope of an agency's BCA can lead to inconsistent results, however, if different courts do not agree on the interpretation of Congress's intent. Such was the case when courts analyzed the permissible scope of BCA under a provision of the Endangered Species Act ("ESA") that requires the U.S. Fish and Wildlife Service ("FWS") to perform an economic analysis of any critical habitat designation.[125] The FWS interpreted the scope of this BCA to include the but-for benefits and costs associated with designating critical habitats—taking as given the benefits and costs of listing the species (a decision that must be made without considering costs) and other decisions under the ESA.[126] The Tenth Circuit took issue with this "incremental baseline approach," holding that it would render the economic analysis "virtually meaningless," especially in light of the other decisions required under the ESA that occur prior to or contemporaneously with the critical habitat designation.[127] Hence, the court concluded that the FWS's interpretation of the scope of BCA required for the critical habitat designation was prohibited by the language and intent of the ESA.[128] But, when the Ninth Circuit was faced with deciding this same question almost a decade later, it refused to follow the Tenth Circuit.[129] Although the understanding of other decisions under the ESA had changed since the Tenth Circuit's decision, rendering some of the Tenth Circuit's reasoning flawed, the Ninth Circuit made a point to comment that the "baseline approach is, if anything, more logical" given the purpose of a BCA in this context.[130]

Oftentimes, however, a statute encourages the consideration of benefits and costs, but provides little additional guidance as to the scope of al-

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123 Owner-Operator Indep. Drivers Ass'n v. FMCSA, 656 F.3d 580, 582 (7th Cir. 2011) ("We conclude that the rule cannot stand because the Agency failed to consider an issue that it was statutorily required to address. Specifically, the Agency said nothing about the requirement that any regulation about the use of monitoring devices in commercial vehicles must 'ensure that the devices are not used to harass vehicle operators.'" (quoting 49 U.S.C. § 31137(a))).

124 *Pub. Citizen*, 374 F.3d at 1216 ("We hold that the final rule is arbitrary and capricious because the agency neglected to consider a statutorily mandated factor—the impact of the rule on the health of drivers.").

125 16 U.S.C. § 1533(b)(2) (2012).

126 N.M. Cattle Growers Ass'n v. FWS, 248 F.3d 1277, 1283 (10th Cir. 2001).

127 *Id.* at 1280, 1285.

128 *Id.* at 1285 ("[W]e conclude Congress intended that the FWS conduct a full analysis of all of the economic impacts of a critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes. Thus, we hold the baseline approach to economic analysis is not in accord with the language or intent of the ESA.").

129 Ariz. Cattle Growers' Ass'n v. Salazar, 606 F.3d 1160, 1173 (9th Cir. 2010).

130 *Id.*

lowable BCA.[131] In these cases, the court gives the agency "considerable latitude in deciding how far to inquire into further benefits and burdens 'the [agency] considers relevant.'"[132] While courts may require that the treatment of costs be commensurate with the treatment of benefits,[133] this inquiry is generally deferential.[134]

Nonetheless, there are examples in which courts have invalidated an agency's action based on reliance on an "incomplete" BCA.[135] The support for this judicial role again comes from *State Farm*—as a reviewing court must ensure that an agency does not miss an important aspect of the problem.[136] In the context of a BCA, this could refer to the agency's omission of an important factor in its entirety or to the agency's failure to adequately quantify or monetize the factor in its analysis.

Acting in this role, courts have identified instances where the agency has failed to fully consider important categories of a rule's costs in its BCA. A key example is the Fifth Circuit's "especially aggressive"[137] review of

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131 Or, the statute may require that the agency quantify relevant factors to the greatest extent practicable. *See, e.g.*, Natural Res. Def. Council, Inc. v. Herrington, 768 F.2d 1355, 1400 (D.C. Cir. 1985) ("Congress thus mandated quantitative analysis of the factors relevant to economic justification 'to the greatest extent practicable.' Congress did not, however, inflexibly require that DOE's forecasts be based on precisely and minutely verifiable details.").

132 *Id.* at 1417 (quoting another source).

133 Sierra Club v. Sigler, 695 F.2d 957, 979 (5th Cir. 1983) ("The [agency] cannot tip the scales of an EIS by promoting possible benefits while ignoring their costs. Simple logic, fairness, and the premises of cost-benefit analysis, let alone [the National Environmental Policy Act], demand that a cost-benefit analysis be carried out objectively. There can be no 'hard look' at costs and benefits unless all costs are disclosed.").

134 *See Natural Res. Def. Council*, 768 F.2d at 1416-17.

135 We stress that this trend might not be limited to cases where the agency was required to rely on some sort of BCA. The D.C. Circuit has stated that an agency cannot save its reliance on an incomplete or flimsy BCA by arguing that it was not required to rely on BCA. *See, e.g.*, Am. Equity Inv. Life Ins. Co. v. SEC, 613 F.3d 166, 177 (D.C. Cir. 2010) ("The SEC conducted a [BCA] when it issued the rule with no assertion that it was not required to do so. Therefore, the SEC must defend its analysis before the court upon the basis it employed in adopting that analysis.").

136 Motor Vehicle Mfrs. Ass'n of the United States v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983).

137 SUNSTEIN, *supra* note 8, at 48. We note that the Fifth Circuit in *Corrosion Proof* applied a stricter review under the "substantial evidence" standard than it thought would be required by the "arbitrary or capricious" standard. *See* Corrosion Proof Fittings v. EPA, 947 F.2d 1201, 1213-14 (5th Cir. 1991) ("[T]he arbitrary and capricious standard found in the APA and the substantial evidence standard found in TSCA are different standards . . . . 'The substantial evidence standard mandated by [TSCA] is generally considered to be more rigorous than the arbitrary and capricious standard normally applied to informal rulemaking,' and 'afford[s] a considerably more generous judicial review' than the arbitrary and capricious test." (second and third alterations in original) (citation omitted) (quoting Envtl. Def. Fund, Inc. v. EPA, 636 F.2d 1267, 1277 (D.C. Cir. 1980); Abbott Labs., Inc. v. Gardner, 387 U.S. 136, 143 (1967), *overruled on other grounds by* Califano v. Sanders, 430 U.S. 99 (1977))). During the conference, Professor Michael Greve suggested that this might be why the challengers decided to litigate the case in the Fifth Circuit as opposed to in the D.C. Circuit, which believed that the two standards of review were the same. Michael Greve, Professor, George Mason Univ. Sch. of Law,

EPA's ban on asbestos manufacture, importation, processing, and distribution promulgated under the Toxic Substances Control Act ("TSCA").[138] In addition to identifying a number of methodological flaws in the EPA's BCA,[139] the court criticized the agency for failing to consider the unintended consequences of a ban on asbestos, such as the increased use of dangerous substitutes.[140] For the court, this omission rendered the comparison of benefits and costs of the ban incomplete and the reliance on this BCA unreasonable.[141] Similarly, the D.C. Circuit invalidated several rules of the Securities and Exchange Commission ("SEC") due to the agency's failure to fully consider the benefits and costs of the rules, given its statutory requirement to consider effects on efficiency, competition, and capital formation.[142] For example, in *Business Roundtable v. SEC*,[143] the court criticized the agency for "inconsistently and opportunistically fram[ing] the costs and benefits" and failing to quantify certain costs.[144] In addition, the D.C. Circuit has criticized the Department of Energy ("DOE") for failing to make a "serious effort" to quantify costs when its statutory obligation under the Energy Policy and Conservation Act "mandated quantitative analysis of the factors relevant to economic justification 'to the greatest extent practicable.'"[145]

But, courts are not only concerned with failures to consider or quantify important categories of costs; courts also look for omissions of important categories of benefits when reviewing the adequacy of an agency's BCA. For example, when the Ninth Circuit reviewed the National Highway Traffic Safety Administration ("NHTSA")'s rule setting corporate average fuel economy standards for light trucks, it found, among other things, that the NHTSA's failure to monetize the benefits of greenhouse gas emissions reductions in its BCA was arbitrary and capricious.[146] Even accepting the NHTSA's contention that there is disagreement on the value of the reductions within the scientific community, the court found that their value was "certainly not zero."[147] In this case, the court displayed an understanding that, in the context of a BCA, categories not quantified or monetized might

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Law and Economics Center: Public Policy Conference on Administration Unbound? Delegation, Deference, and Discretion (Sept. 12, 2014).

138 *Corrosion Proof*, 947 F.2d at 1217-19.

139 *See* discussion *infra* Part III.B.2.

140 *Corrosion Proof*, 947 F.2d at 1221-22, 1224, 1226.

141 *Id.* at 1224-25, 1229.

142 *See, e.g.*, Bus. Roundtable v. SEC, 647 F.3d 1144, 1448-49 (D.C. Cir. 2011); Chamber of Commerce of the U.S. v. SEC, 412 F.3d 133, 136 (D.C. Cir. 2005).

143 647 F.3d 1144 (D.C. Cir. 2011).

144 *Id.* at 1148-49.

145 Natural Res. Def. Council, Inc. v. Herrington, 768 F.2d 1355, 1400 (D.C. Cir. 1985).

146 Ctr. for Biological Diversity v. NHTSA, 538 F.3d 1172, 1200 (9th Cir. 2008).

147 *Id.*

end up being forgotten.[148] The D.C. Circuit has also commented that the lack of precise data on an effect is not an excuse for ignoring that effect, especially when the effect's inclusion could change the balance of the BCA.[149] Perhaps in the absence of a statutory limitation on the scope of BCA, courts will increasingly encourage the agency to conduct as complete and rigorous a BCA as is feasible.[150]

Without a statutory cue, the categories of costs or benefits that the court determines are feasible or reasonable for the agency to analyze, however, may change over time depending on the context. For example, in 1990, the D.C. Circuit allowed the NHTSA to ignore the negative safety effects of higher corporate average fuel economy standards in its BCA.[151] The agency conceded, however, that higher corporate fuel economy standards may lead to vehicle size reductions that may reduce passenger safety, and that this size-safety relationship may become important if corporate average fuel economy standards are raised any higher.[152] But the court deferred to the NHTSA's contention that "the time for such an assessment has not yet come."[153] By 1992, the time had come, and the D.C. Circuit found that the agency now owed the public a reasoned analysis of this size-safety tradeoff, given the agency's decision not to reduce the latest corporate average fuel economy standard.[154]

Finally, an important aspect of the problem missing from the analysis might not be a category of benefits or costs at all—but rather the benefits

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148 This is a common criticism on the reliance on BCA—that it minimizes the role of important factors that cannot be adequately quantified or monetized at present. *See, e.g.*, Coates, *supra* note 19, at 88. In other cases, however, the court may be concerned that unquantified effects could be used as a "trump card" when justifying the rule. *See* Corrosion Proof Fittings v. EPA, 947 F.2d 1201, 1219 (5th Cir. 1991) ("While TSCA contemplates a useful place for unquantified benefits beyond the EPA's calculation, unquantified benefits never were intended as a trump card allowing the EPA to justify any cost calculus, no matter how high.").

149 Pub. Citizen v. FMCSA, 374 F.3d 1209, 1218-19 (D.C. Cir. 2004) ("[T]he model disregarded the effects of 'time on task' because, the agency said, it did not have sufficient data on the magnitude of such effects. . . . The mere fact that the magnitude of time-on-task effects is *uncertain* is no justification for *disregarding* the effect entirely. . . . In light of this dubious assumption, the agency's cost-benefit analysis is questionable . . . ." (quoting Hours of Service of Drivers; Driver Rest and Sleep for Safe Operations, 68 Fed. Reg. 22,456, 22,497 (Apr. 28, 2003)).

150 *Compare Corrosion Proof*, 947 F.2d at 1222 ("While Congress did not dictate that the EPA engage in an exhaustive, full-scale cost-benefit analysis, it did require the EPA to consider both sides of the regulatory equation, and it rejected the notion that the EPA should pursue the reduction of workplace risk at any cost."), *with Natural Res. Def. Council.*, 768 F.2d at 1417 ("In light of the broad deference appropriately due an agency in allocating its limited resources for investigation of different aspects of a complex and highly technical regulatory problem, we refrain from holding that DOE was legally required to conduct a more thorough factual inquiry into [this aspect of the problem].").

151 *See* Competitive Enter. Inst. v. NHTSA, 901 F.2d 107, 120-22 (D.C. Cir. 1990).

152 *Id.* at 121-22.

153 *Id.*

154 Competitive Enter. Inst. v. NHTSA, 956 F.2d 321, 327 (D.C. Cir. 1992).

and costs of a separate alternative not considered by the agency. In *Corrosion Proof Fittings v. EPA*,[155] for example, the Fifth Circuit criticized the EPA for comparing a scenario with a ban on asbestos to a scenario with no further regulation under TSCA—without considering an intermediate alternative—despite its obligation to promulgate the least burdensome regulation that would adequately protect the environment.[156] To satisfy its obligation, the court found that the EPA should have evaluated the benefits and costs of other less burdensome regulatory alternatives in its BCA.[157] Otherwise, "it is impossible, both for the EPA and for this court on review, to know that none of these alternatives was less burdensome than the ban in fact chosen by the agency."[158]

Overall, this examination has revealed that courts look to the relevant statute for cues on the permissible scope of BCA. Thus, currently, their guidance on the appropriate scope for BCA is constrained by the statutory language. When the statute is silent on the BCA's scope, however, courts have encouraged comprehensive assessment of benefits and costs in some contexts, but judicial encouragement of broadly based BCA is inconsistent. This is partially due to the conflicting judicial norms of deferring to the agency's judgment on scope and ensuring that the resulting analysis is objective, fair, and complete.

2. Underlying Assumptions or Methodology

Generally, a court reviews the agency's choice of model, methodology, and assumptions in its BCA deferentially, recognizing the agency's comparative advantage in making such technical choices. But, if the court discovers a serious flaw in the underlying assumptions or methodology of the analysis, it will find the agency's reliance on the questionable BCA to be unreasonable and invalidate the resulting agency action. Table 3 describes the cases that included a challenge to the BCA's assumptions or methodology. This Subsection focuses on the instances in which the court found the BCA to be sufficiently flawed to warrant invalidation of the rule.

In most cases, the court defers to the agency on technical decisions. For example, when the D.C. Circuit evaluated the EPA's proposed regulations under a provision of the CWA, it rejected the National Wildlife Federation's challenge to the underlying model used in part of EPA's analysis, stating that "[it] may reject an agency's choice of a scientific model 'only when the model bears no rational relationship to the characteristics of the

155 947 F.2d 1201 (5th Cir. 1991).

156 *Id.* at 1217.

157 *Id.*

158 *Id.*

data to which it is applied.' That is not the case here."[159] Similarly, it is not sufficient that a different assumption or methodology would have yielded a different result, as long as the agency's method was not chosen "arbitrarily or merely for the purpose of achieving a predetermined prejudicial effect."[160] Other examples abound.[161]

Sometimes, however, a statute specifically directs the agency to use the "best available" evidence when implementing its provisions.[162] Courts may then analyze whether the agency's underlying assumptions used to estimate benefits or costs are "best" in light of scientific evidence.

Although not an example of a case involving judicial review of BCA, *Chlorine Chemistry Council v. EPA*[163] is instructive in demonstrating how a court would analyze an agency's decision to rely on a faulty modeling assumption. The court invalidated the EPA's decision to set its maximum contaminant level goal ("MCLG") for chloroform at zero,[164] a decision that went against a growing body of scientific evidence and the agency's own conclusion that chloroform is a threshold pollutant that poses no risks below a certain level.[165] Although the MCLG is aspirational, any errors in estimating the risk of chloroform when setting the MCLG could in turn affect the enforceable MCL (that is based on a BCA) because the agency has a statutory obligation to try to remain "as close to the [MCLG] as is feasible."[166]

In *City of Waukesha v. EPA*,[167] the petitioners again argued that the agency made a critical modeling mistake, this time in the context of setting a MCLG and, based on BCA, an enforceable MCL for naturally occurring uranium.[168] In this case, however, the court deferred to the agency's decision to employ a linear, non-threshold model for uranium risk, resulting in an MCLG of zero.[169] The difference, according to the court, was that the scientific data on the toxicity of uranium was contradictory, and "[t]he resolution of this contradictory data [was] well within EPA's expertise."[170] Sim-

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159 Nat'l Wildlife Fed'n v. EPA, 286 F.3d 554, 565 (D.C. Cir. 2002) (per curiam) (citation omitted) (quoting Appalachian Power Co. v. EPA, 135 F.3d 791, 802 (D.C. Cir. 1998)).

160 Chem. Mfrs. Ass'n v. EPA, 870 F.2d 177, 228 (5th Cir. 1989) (acknowledging that different methods can produce different results), *clarified on reh'g*, 885 F.2d 253 (5th Cir. 1989).

161 *See infra* Table 3.

162 *See, e.g.*, Safe Drinking Water Act, 42 U.S.C. § 300g-1(b)(3)(A)(i) (2012).

163 206 F.3d 1286 (D.C. Cir. 2000).

164 *Id.* at 1291. An MCLG of zero implies that there is no level of exposure to this contaminant that is deemed safe. *See id.* at 1287.

165 *Id.* at 1288.

166 42 U.S.C. §§ 300g-1(b)(4)(B)-(C).

167 320 F.3d 228 (D.C. Cir. 2003) (per curiam).

168 *Id.* at 231. The case also discussed the setting of a radium MCLG, but BCA was not implicated in this discussion.

169 *Id.* at 252.

170 *Id.*

ilarly, the petitioner's challenges to the BCA-based MCL also failed as "in the face of uncertain laboratory and epidemiological data," the court found that "it was reasonable for EPA to take the risk-averse approach of relying on the animal laboratory data to develop a lower standard."[171]

These cases suggest that, when a statute directs an agency to employ the best-available evidence, courts are willing to review the assumptions relevant to the agency's BCA in detail. Courts are unlikely to reject the agency's assumptions, however, unless the agency's decision is clearly contrary to scientific evidence.[172] Given disagreement within the scientific community, courts are willing to allow the agency to decide what evidence is "best."

In most other cases, the reviewing court will even overlook minor flaws in the agency's analysis and forgive small errors of judgment, especially when these errors do not affect the reasonableness of the agency's overall conclusions.[173] For example, in *Center for Auto Safety v. Peck*,[174] the D.C. Circuit upheld as reasonable the NHTSA's BCA supporting its decision to reduce a minimum performance standard for automobile bumpers, even though the court conceded that there was plausible disagreement on many of the NHTSA's conclusions.[175] In fact, despite finding a "blatant" error in reasoning, the court decided that "[c]onsidering the record as a whole, [it] cannot say that this single error on an alternative point—blatant though it may be—renders the entire rulemaking arbitrary or capricious."[176] Ultimately, the court found that "[t]he enterprise was pursued . . . through a methodology that was sensible . . . and [the NHTSA's] conclusions are within the range of those that a reasonable person could derive from the evidence presented."[177] In other cases, courts have also approved agency BCAs that rely on potentially faulty assumptions.[178]

That said, a serious flaw in the analysis could presumably render a BCA unreasonable.[179] But what kind of flaw in the assumption or method

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171 *Id.* at 254. The court also rejected challenges to the agency's BCA that were based on a misunderstanding of the procedure. *Id.* at 255.

172 *See* Reserve Mining Co. v. EPA, 514 F.2d 492, 507 n.20 (8th Cir. 1975) (en banc) ("Indeed, a number of the disputes involve conflicting theories and experimental results, about which it would be judicially presumptuous to offer conclusive findings.").

173 *See, e.g.*, Natural Res. Def. Council, Inc. v. Herrington, 768 F.2d 1355, 1418 (D.C. Cir. 1985) ("However, we would be reluctant to seize upon a single apparently erroneous datum in a very complex rulemaking and announce that the error undermines the entire rule . . . particularly when the underlying technical issues have not, even with the benefit of supplemental briefing, been completely ventilated.").

174 751 F.2d 1336 (D.C. Cir. 1985).

175 *Id.* at 1370.

176 *Id.* at1366.

177 *Id.* at 1370.

178 *See infra* Table 3.

179 Nat'l Ass'n of Home Builders v. EPA, 682 F.3d 1032, 1040 (D.C. Cir. 2012) ("[W]hen an agency decides to rely on a cost-benefit analysis as part of its rulemaking, a serious flaw undermining

would be serious enough? Or, how many minor flaws would be too many? Again, the Fifth Circuit's decision in *Corrosion Proof Fittings v. EPA* is an interesting case study as the court found numerous flaws in the EPA's BCA.[180] In addition to the EPA's failure to consider the costs of asbestos substitutes or the benefits and costs of alternatives to an outright ban, the EPA's BCA also employed flawed methodology.[181] For one, the court found that the EPA failed to correctly discount benefits along with costs.[182] The court also found that the EPA used an unreasonable time frame for its benefits calculation.[183] Finally, the court suspected that the EPA double counted the costs of asbestos use.[184] It is unclear, however, if any one of these flaws in the BCA's methodology would have been sufficient on its own to invalidate the EPA's proposed asbestos ban.[185] A review of other cases suggests that methodological flaws would have to combine with scope and transparency problems for a court to invalidate the rule.[186]

Overall, it is not surprising that courts are particularly deferential when reviewing an agency's BCA assumptions or methodology. Rarely was disagreement with an agency's choice of model, assumption, or estimate enough to invalidate a rule, especially when there existed some evidence to support the agency's choice.[187] In fact, in the cases where courts criticized these aspects of the BCA, there were other problems in the agency's decision making, such as the BCA's inappropriate scope or the agency's failure to disclose or explain important features of the analysis; often, these problems already warranted invalidation of the rule.[188]

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that analysis can render the rule unreasonable." (citing City of Portland v. EPA, 507 F.3d 706, 713 (D.C. Cir. 2007))).

180 Corrosion Proof Fittings v. EPA, 947 F.2d 1201, 1216-18 (5th Cir. 1991).

181 *Id.* at 1217-21.

182 *Id.* at 1218.

183 *Id.*

184 *Id.* at 1219.

185 Even in this case, however, the court rejected some methodological challenges against the agency. *See id.* at 1229 (rejecting challenges to the EPA's decision to treat all types of asbestos the same, the EPA's conclusion that various lengths of fibers present similar toxic risks, and the EPA's decision that asbestos presents similar risks even in different industries and noting that "[w]hile we can, and in this opinion do, question the agency's reliance upon flawed methodology and its failure to consider factors and alternatives that TSCA explicitly requires it to consider, we do not sit as a regulatory agency ourselves").

186 *See infra* Table 1.

187 *See infra* Tables 1, 3. We only found one case, Advocates for Highway & Auto Safety v. FMCSA, 429 F.3d 1136 (D.C. Cir. 2005), in which the court invalidated the rule after only considering a challenge to the underlying assumptions of the BCA. *Id.* at 1146-47 (finding the FMCSA's assertion that its new rule would generate a "sufficient benefit" to be nonsensical given the FMCSA's "patently illogical" assumptions).

188 *See, e.g.*, Pub. Citizen v. FMCSA, 374 F.3d 1209, 1216, 1218-19 (D.C. Cir. 2004).

3. Transparency

Table 4 describes transparency challenges to the agency's BCA. In some cases, courts require the agency to provide more information about the BCA's methodology or assumptions. By requiring such disclosure, courts incentivize more transparent BCAs that provide notice (and an opportunity to comment) to those critical of the agency's decisions. In addition, increased disclosure of BCA methodologies and quantification of relevant benefits and costs make it easier for courts to substantively review BCAs. In other cases, courts require the agency to provide more information about why it eliminated some costs, benefits, or alternatives from its analysis.

There are a few examples of judicial requirements for more disclosure of a BCA's methodology and assumptions. For example, the D.C. Circuit found that the FMCSA violated the APA's requirements for notice-and-comment rulemaking by failing to disclose the methodology of the agency's operator-fatigue model, a crash-risk analysis that was a central component of the justification for the final rule, thereby prejudicing the petitioner by removing the opportunity to comment on the model.[189] Essentially, the "complete lack of explanation for an important step in the agency's analysis was arbitrary and capricious."[190] Courts require disclosure even if they would ordinarily provide great deference to the agency's decisions, but the transparency issues must be raised before the agency prior to litigation.[191]

Natural Resources Defense Council, Inc. v. Herrington[192] provides another example of a court requiring more disclosure of a BCA's underlying assumptions. The D.C. Circuit analyzed the DOE's use of a real annual discount rate of 10 percent when determining life cycle costs and the net present value of savings from appliance energy efficiency standards.[193] The court rejected the DOE's choice of discount rate "as fatally unexplained" in light of its major consequences for the estimation of benefits and costs.[194] Interestingly, the fact that the agency used the OIRA's recommended dis-

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189 Owner-Operator Indep. Drivers Ass'n v. FMCSA, 494 F.3d 188, 199-202 (D.C. Cir. 2007). That said, petitioner must provide some indication of what it would challenge about the methodology and that the challenge, if successful, may change the benefit-cost balance. *See* City of Waukesha v. EPA, 320 F.3d 228, 246-47 (D.C. Cir. 2003) (per curiam).

190 *Owner-Operator Indep. Drivers*, 494 F.3d at 204.

191 *See* Ctr. for Auto Safety v. Peck, 751 F.2d 1336, 1361 (D.C. Cir. 1985) ("[W]e must be implacably skeptical of belated recognition at the appellate stage that elements of scientific analysis unchallenged during a contested proceeding are incomprehensible without further explanation. To credit such post-appeal pleas of inadequate information is to threaten the integrity of all rulemaking in fields beyond our own limited scientific ken.").

192 768 F.2d 1355 (D.C. Cir. 1985).

193 *Id.* at 1412-14.

194 *Id.* at 1414.

count rate was not deemed to be a sufficient explanation.[195] In addition to a lack of information about the chosen discount rate, the court found other deficiencies in the agency's explanation of its assumptions.[196] For example, the court requested more information on the origin of certain statistics underlying benefit estimates,[197] as well as on the assumptions behind the agency's use of a specific model to estimate certain costs.[198]

Judicially imposed requirements for more explanation and more quantification could serve two goals. First, these requirements would increase BCA transparency for the public, allowing those potentially critical of BCA an opportunity to contact the agency about the scope, methodology, or assumptions in the BCA before the final rulemaking. Second, these requirements would enhance the ability of courts to meaningfully review BCA going forward.[199] This rationale could explain why courts have pushed agencies to explain, quantify, and monetize the most important effects.[200]

IV. AGENCY BENEFIT-COST ANALYSIS AS EVIDENCE

As discussed previously, Executive Order 12,866 requires an agency to prepare a BCA for all significant rules—even if the agency is ultimately not required to, and does not, rely on the BCA when implementing the relevant statutory provision.[201] The BCA still becomes part of the record before the agency (and, ultimately, the court). If the court finds the BCA to be persuasive, it may use the BCA as evidence in support of or, more typically, against the agency's decision. In this variation, the BCA is not directly challenged, but the court indirectly reviews the BCA to determine its persuasiveness in support of or against the agency's position. Table 5 describes cases in which the BCA was used as evidence.

Although we identified instances in which a court used a BCA to support agency action, there are more examples of courts using the agency's BCA against the agency.[202] For example, in *R.J. Reynolds Tobacco Co. v.*

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195 *Id.* at 1413.

196 *Id.* at 1413-14.

197 *Id.* at 1419.

198 *Natural Res. Def. Council*, 768 F.2d at 1419-22.

199 *See* Corrosion Proof Fittings v. EPA, 947 F.2d 1201, 1219 (5th Cir. 1991) ("Such [reliance on unquantified benefits to justify regulation] not only lessen[s] the value of the EPA's cost analysis, but also make[s] any meaningful judicial review impossible.").

200 *See, e.g.*, Bus. Roundtable v. SEC, 647 F.3d 1144, 1148-49 (D.C. Cir. 2011); Chamber of Commerce of the U.S. v. SEC, 412 F.3d 133, 143-45 (D.C. Cir. 2005).

201 Technically, the executive order says an agency must rely on BCA if allowed to do so, but ultimately this is not a judicially enforceable requirement.

202 *See infra* Table 5.

FDA,[203] the D.C. Circuit found that the U.S. Food and Drug Administration ("FDA") did not provide substantial evidence that graphic warnings on cigarette advertising would directly advance its interest in reducing smoking rates to a material degree.[204] As mandatory graphic warnings were a type of limit on commercial speech, the court applied an intermediate level of scrutiny, evaluating whether the agency's means were narrowly tailored to achieve a substantial government goal.[205] The court used the agency's own BCA to support its determination that graphic warnings would not directly advance the asserted government interest to a material degree.[206] The FDA's regulatory impact analysis drew on two types of evidence regarding the likely effect of graphic health warnings on smoking prevalence rates—survey data regarding how consumers perceived different kinds of possible graphic health warnings and a statistical analysis of the effect of the graphic health warnings on smoking prevalence rates in Canada.[207] The main focus was on the Canadian experience, as that embodied the effect of an actual graphic health warnings "experiment" in a country quite similar to the United States.[208] In each case, the FDA did not find any statistically significant evidence of the efficacy of the graphic warnings.[209] The court conclud-

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203 696 F.3d 1205 (D.C. Cir. 2012), *overruled in part by* Am. Meat Inst. v. USDA, 760 F.3d 18 (D.C. Cir. 2014) (en banc).

204 *Id.* at 1217-19. One of the authors served as an industry expert on this matter. *See* Comments of W. Kip Viscusi, Professor, Vanderbilt University, at the request of R.J. Reynolds Tobacco Company, Lorillard Tobacco Company, and Commonwealth Brands, Inc., for U.S. Food and Drug Administration Docket No. FDA-2010-N-0568, RIN-0910-AG41, Required Warnings for Cigarette Packages & Advertisements (Jan. 11, 2011).

205 In 2014, the D.C. Circuit overruled part of the case that limited application of rational basis review to narrow circumstances. *Am. Meat Inst.*, 760 F.3d at 22-23. This perceived limitation on the application of rational basis review led the court in *R.J. Reynolds* to apply the stricter intermediate scrutiny.

206 *R.J. Reynolds Tobacco*, 696 F.3d at 1219-21.

207 *Id.*

208 *Id.*

209 Some scholars, however, argue that these studies provided sufficient evidence of the effectiveness of graphic warnings and have suggested that the decision was a reflection of the emergence of new libertarian administrative law. *See* Cass R. Sunstein & Adrian Vermeule, *Libertarian Administrative Law* 22 (Harvard Pub. Law Working Paper No. 14-29, 2014), *available at* http://ssm.com/abstract=2460822 ("The FDA's evidence, coming largely from reductions in smoking after graphic warnings were required in Canada, did involve inferences . . . . But . . . the inferences were very much of the kind that lie at the core of administrators' competence."). However, a careful review of the FDA's analysis and the *R.J. Reynolds* decision indicates that the court had a thorough understanding of the components of the FDA analysis and its implications, which were less favorable to the rule than Sunstein and Vermeule suggest. The FDA could not reject the statistical hypothesis of a zero effect. The FDA's point estimate of the effect of graphic warnings on smoking prevalence rates was 0.088 percentage points, or less than one-tenth of one percentage point, and the small effect lacked statistical significance. Required Warnings for Cigarette Packages and Advertisements, 76 Fed. Reg. 36,628, 36,721, 36,724, 36,6756, 36,775-76 (June 22, 2011). The decision in *R.J. Reynolds* reviewed the Canadian data in considerable detail and noted that the FDA also concluded that it found that the effects of graphic

ed, the "FDA has not provided a shred of evidence—much less the 'substantial evidence' required by the APA—showing that the graphic warnings will 'directly advance' its interest in reducing the number of Americans who smoke."[210] The court's ruling is quite consistent with the statistical evidence presented by the FDA. As with the other cases discussed above, there appears to be no apparent inability of the court to either understand or properly assess the agency's BCA.

In addition, courts have referred to a prior BCA in order to disapprove of the final rule (which was not as stringent as the prior BCA suggested would be necessary).[211] A BCA could also demonstrate the feasibility or desirability of alternative or additional interventions.[212]

V. THE FUTURE OF JUDICIAL REVIEW

The analysis in Parts II, III, and IV has generated several observations about the state of judicial review of BCA. First, it is clear that the statutory language is key, both in clarifying whether BCA is permissible and in outlining the scope and depth of adequate BCA. But, as with other matters, courts may disagree on the meaning of the statutory language and provide inconsistent directions on permissible BCA. The importance of statutory language also makes clear that any congressional enactments that would increase the permissibility of agency reliance on BCA may also have an effect on the nature of the required analysis.

In the absence of specific statutory language outlining the scope of an agency's BCA, courts generally evaluate whether the BCAs include all relevant aspects of the problem, ensuring that entire categories of benefits or costs are not omitted from the analysis. Courts are also increasingly requiring agencies to quantify benefits and costs to the extent possible. The standard of what is an acceptable BCA may change over time as courts become more comfortable evaluating the analyses and as conducting high-quality BCA becomes more feasible. Today, sophisticated agency BCA is possible given advances in methodologies and modeling. Whereas previously, courts may have been sympathetic to the agency's difficult challenge—forgiving even obvious flaws—the courts may now expect high-

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warnings were "in general not statistically distinguishable from zero." *R.J. Reynolds Tobacco Co.*, 696 F.3d at 1220 (quoting Required Warnings for Cigarette Packages and Advertisements, 76 Fed. Reg. at 36,776) (internal quotation marks omitted). The court noted that "FDA could not even reject the statistical possibility that the Rule would have *no* impact on U.S. smoking rates." *Id.*

210 *R.J. Reynolds Tobacco Co.*, 696 F.3d at 1219.

211 Advocates for Highway & Auto Safety v. FMCSA, 429 F.3d 1136, 1145-46 (D.C. Cir. 2005).

212 *See* Pub. Citizen, Inc. v. Mineta, 340 F.3d 39, 58 (2d Cir. 2003) (using the BCA to demonstrate that a more cost-effective alternative exists); Natural Res. Def. Council, Inc. v. EPA, 824 F.2d 1258, 1289 (1st Cir. 1987) (rejecting as unreasonable the agency's decision not to implement in the final rule cheap ways of increasing protections identified in the BCA).

quality BCAs. Given what is possible today, it might be unreasonable for an agency to rely on a low-quality BCA.

This Article's analysis has also revealed some prominent virtues of judicial review of agency BCA. A robust judicial review provides another check on agency BCA and catches some errors not addressed by the OIRA because of an oversight or political expediency. Judicial review could thus prevent some abuses of the use of BCA. Courts have also encouraged agencies to provide detailed explanations of the underlying methodology and to quantify as many effects as possible, making BCA more transparent to the public and allowing for more meaningful review going forward.[213] Finally, our review of thirty-eight cases involving BCA does not demonstrate any inability of the courts to grasp the economic issues, despite the judges' professed lack of expertise. The regulatory impact analysis and evidence presented at trial would provide the courts with a substantive basis for assessment in much the same way as regulatory decisions are made by the director of the OIRA, who typically has been an attorney without doctoral training in economics.

On the other hand, judicial review does not ensure consistency in methodology or assumptions within one rulemaking in one agency, much less across rulemakings or across agencies. Courts only review BCAs of challenged rulemakings that rely on BCA—unlike the OIRA, which reviews BCAs for all significant rulemakings. Courts also vary in their levels of comfort with evaluating complex and technical documents.

In addition, stringent judicial review may impose significant costs on agencies and further delay rulemakings. When a court invalidates a rule based on reliance on a faulty BCA, the world returns to the pre-rule status quo—which may be a less welfare-enhancing scenario. By the time the agency corrects the BCA to the court's satisfaction, years may have passed. For example, it took more than ten years and multiple rounds of litigation for the court to approve the FMCSA's regulations on hours of service for commercial drivers.[214] In that case, Congress actually enshrined the originally invalidated rule until the FMCSA could promulgate a new rule that satisfied the court.[215] However, Congress is unlikely to act so quickly in the case of other invalidated rules.

As Congress continues to consider proposed legislation to expand agency BCA requirements, it is especially important to evaluate how such legislation would affect judicial review. Commonly proposed bills require agencies to conduct BCA sometimes without demanding any particular result. If BCA statutory requirements are procedural, then courts could still

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213 *See infra* Tables 3, 4.

214 *See* Am. Trucking Ass'ns v. FMCSA, 724 F.3d 243, 251 (D.C. Cir. 2013), *cert. denied*, 134 S. Ct. 914 (2014); Pub. Citizen v. FMCSA, 374 F.3d 1209, 1222 (D.C. Cir. 2004), *rev'd sub nom.* Owner-Operator Indep. Drivers Ass'n v. FMCSA, 494 F.3d 188, 206 (D.C. Cir. 2007).

215 *See Am. Trucking Ass'ns*, 724 F.3d at 245-46 (describing the saga).

inquire into the adequacy of the BCA as they do with environmental impact statement ("EIS") requirements under the National Environmental Policy Act ("NEPA").[216] Or, a proposed bill may encourage agencies to promulgate rules that pass a benefit-cost test, but only to the extent permissible by law. This type of requirement would essentially codify the existing executive order and create more opportunities for courts to review agency BCA as they do now.

But, Congress could also enact a supermandate provision that might override an agency's current mandate. The provision could either permit agencies to base policies on BCA ("soft" supermandate) or require agencies to base policies on a benefit-cost test ("hard" supermandate), notwithstanding potentially contrary statutory prohibitions.[217] Permitting BCA in all cases would also have some effect in bolstering the role of the judiciary, as specifically framed statutory guidance would no longer be binding. If, however, the agency's policies were required to pass a benefit-cost test, then the role of judicial review would be greatly expanded unless the enacted laws explicitly limit judicial review.

If judicial review were allowed, courts would not usurp the role of the OIRA but could provide a check on regulatory policies that were not appropriately screened out by the executive branch's regulatory oversight process, as in the case of the FDA's proposed graphic warnings regulation.[218] In addition, with BCA-based decision making directly required by Congress, courts may be more likely to engage in a strict review along the lines of the judicial review in *Corrosion Proof Fittings v. EPA*.[219]

Proper assessment of whether there should be an expanded role of the judiciary requires a comprehensive BCA of its own. What is the extent of the regulatory failures that need to be fixed? To what extent is an expanded regulatory oversight effort either unable or unlikely to be able to address these problems? And, if judicial review is enhanced, would the principal effect be to overturn regulations that are not in society's best interests, or would it delay or overturn beneficial regulations? The answers to these questions often hinge on the specific nature of the regulatory reform legislation.

CONCLUSION

This Article has evaluated how courts review agency BCAs. It has discussed the conditions that trigger judicial review of agency BCAs and the

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216 *See* discussion *supra* note 93.

217 *See* Sunstein, *supra* note 90, at 270.

218 *See* R.J. Reynolds Tobacco Co. v. FDA, 696 F.3d 1205, 1219-20 (D.C. Cir. 2012), *overruled in part by* Am. Meat Inst. v. USDA, 760 F.3d 18 (D.C. Cir. 2014) (en banc).

219 Corrosion Proof Fittings v. EPA, 947 F.2d 1201, 1213-14 & n.13 (5th Cir. 1991).

standards that govern the review. Against this backdrop, it presented specific examples of how courts analyze BCAs. It found that courts are most comfortable evaluating BCAs in light of statutory guidance. That said, courts have been willing to question BCA methodology and assumptions, and request more transparency on these issues. In addition, BCAs prepared pursuant to executive order can be used against the agency in certain situations, even if the agency does not and need not rely on the BCA. The performance of the courts has been sufficiently competent that entrusting greater responsibility to courts may be beneficial. There is no evidence of courts overstepping their proper scope of authority in this area.

As agencies rely more on BCA in their decision making, judicial review of BCA will be increasingly important. The legitimate institutional actors with respect to regulatory policies include the judiciary as well as Congress and the executive branch. To the extent that the BCA is the pivotal summary of the merits of these policies, engaging with regulatory policy also necessitates some engagement with BCA. The stakes are high. Additional judicial oversight can be valuable—but bolstering any oversight effort to provide a policy check can also impose societal costs if desirable policies are delayed or left unimplemented. Ideally, efforts to foster greater judicial review should be structured so that the enhanced role of the judiciary itself passes a benefit-cost test.

Table 1. Judicial Review of BCA Sample

Case Name	Agency	At Least Some Disapproval of BCA	Analyzed BCA Scope?	Analyzed BCA Assumptions?	Analyzed BCA Transparency?	Used BCA as Evidence
Advocates for Highway & Auto Safety v. FMCSA, 429 F.3d 1136 (D.C. Cir. 2005)	FMCSA	YES		YES		YES
Alabama Power Co. v. OSHA, 89 F.3d 740 (11th Cir. 1996)	OSHA	NO**	YES			
Am. Min. Cong. v. Thomas, 772 F.2d 617 (10th Cir. 1985)	EPA	NO	YES	YES		YES
Am. Trucking Ass'ns v. FMCSA, 724 F.3d 243 (D.C. Cir. 2013) cert. denied, 134 S. Ct. 914 (2014)	FMCSA	NO		YES	YES	
Arizona Cattle Growers' Ass'n v. Salazar, 606 F.3d 1160 (9th Cir. 2010)	FWS	NO	YES			
Bus. Roundtable v. SEC, 647 F.3d 1144 (D.C. Cir. 2011)	SEC	YES	YES	YES		
Chamber of Commerce of the U.S. v. SEC, 412 F.3d 133 (D.C. Cir. 2005)	SEC	YES	YES			
Charter Commc'ns v. FCC, 460 F.3d 31 (D.C. Cir. 2006)	FCC	NO	YES			
Chem. Mfrs. Ass'n v. EPA, 870 F.2d 177, *decision clarified on reh'g*, 885 F.2d 253 (5th Cir. 1989)	EPA	NO		YES	YES	
City of Waukesha v. EPA, 320 F.3d 228 (D.C. Cir. 2003)	EPA	NO	YES	YES		
Competitive Enter. Inst. v. NHTSA, 901 F.2d 107 (D.C. Cir. 1990)	NHTSA	NO	YES			
Competitive Enter. Inst. v. NHTSA, 956 F.2d 321 (D.C. Cir. 1992)	NHTSA	YES	YES			
Consumer Electronics Ass'n v. FCC, 347 F.3d 291 (D.C. Cir. 2003)	FCC	NO	YES	YES		
Corrosion Proof Fittings v. EPA, 947 F.2d 1201 (5th Cir. 1991)	EPA	YES**	YES	YES		

Case Name	Agency	At Least Some Disapproval of BCA	Analyzed BCA Scope?	Analyzed BCA Assumptions?	Analyzed BCA Transparency?	Used BCA as Evidence
Ctr. for Auto Safety v. Peck, 751 F.2d 1336 (D.C. Cir. 1985)	NHTSA	NO		YES	YES	
Ctr. for Biological Diversity v. NHTSA, 538 F.3d 1172 (9th Cir. 2008)	NHTSA	YES	YES	YES		
Florida Manufactured Hous. Ass'n v. Cisneros, 53 F.3d 1565 (11th Cir. 1995)	HUD	NO		YES		
Gas Appliance Mfrs. Ass'n v. DOE, 998 F.2d 1041 (D.C. Cir. 1993)	DOE	YES	YES	YES	YES	YES
Inv. Co. Inst. v. CFTC, 720 F.3d 370 (D.C. Cir. 2013)	CFTC	NO	YES			
N. California Power Agency v. FERC, 37 F.3d 1517 (D.C. Cir. 1994)	FERC	NO		YES		
Nat'l Truck Equip. Ass'n v. NHTSA, 711 F.3d 662 (6th Cir. 2013)	NHTSA	NO				YES
Nat'l Wildlife Fed'n v. EPA, 286 F.3d 554 (D.C. Cir. 2002) *supplemented sub nom.* In re Kagan, 351 F.3d 1157 (D.C. Cir. 2003)	EPA	NO		YES	YES	
Natural Res. Def. Council, Inc. v. EPA, 824 F.2d 1258 (1st Cir. 1987)	EPA	YES				YES
Natural Res. Def. Council, Inc. v. Herrington, 768 F.2d 1355 (D.C. Cir. 1985)	DOE	YES*	YES	YES	YES	
New Mexico Cattle Growers Ass'n v. FWS, 248 F.3d 1277 (10th Cir. 2001)	FWS	YES	YES			
Nw. Envtl. Advocates v. NMFS, 460 F.3d 1125 (9th Cir. 2006)	USACE	NO	YES			
Owner-Operator Indep. Drivers Ass'n v. FMCSA, 494 F.3d 188 (D.C. Cir. 2007)	FMCSA	YES	YES		YES	

Case Name	Agency	At Least Some Disapproval of BCA	Analyzed BCA Scope?	Analyzed BCA Assumptions?	Analyzed BCA Transparency?	Used BCA as Evidence
Owner-Operator Indep. Drivers Ass'n v. FMCSA, 656 F.3d 580 (7th Cir. 2011)	FMCSA	YES	YES			
Pub. Citizen Health Research Grp. v. Tyson, 796 F.2d 1479 (D.C. Cir. 1986)	OSHA	YES*	YES	YES	YES	YES
Pub. Citizen v. FMCSA, 374 F.3d 1209 (D.C. Cir. 2004)	FMCSA	YES	YES	YES		
Pub. Citizen, Inc. v. Mineta, 340 F.3d 39 (2d Cir. 2003)	NHTSA	YES				YES
Quivira Min. Co. v. NRC, 866 F.2d 1246 (10th Cir. 1989)	NRC	NO	YES			
R.J. Reynolds Tobacco Co. v. FDA, 696 F.3d 1205 (D.C. Cir. 2012), *overruled in part by* Am. Meat Inst. v. USDA, 760 F.3d 18 (D.C. Cir. 2014) (en banc)	FDA	NO*				YES
Radio Ass'n on Defending Airwave Rights, Inc. v. DOT, 47 F.3d 794 (6th Cir. 1995)	FHWA	NO	YES	YES	YES	
Reynolds Metals Co. v. EPA, 760 F.2d 549 (4th Cir. 1985)	EPA	NO	YES	YES		
State of La., ex rel. Guste v. Verity, 853 F.2d 322 (5th Cir. 1988)	NMFS	NO		YES		
State of N.Y. v. Reilly, 969 F.2d 1147 (D.C. Cir. 1992)	EPA	YES	YES	YES		
Webster v. USDA, 685 F.3d 411 (4th Cir. 2012)	NRCS	NO	YES	YES		

Notes: The default standard of review is the APA's arbitrary or capricious standard, but * denotes use of substantial evidence standard that most courts recognize as equivalent to the arbitrary or capricious standard and ** denotes use of a stringent substantial evidence standard explicitly determined by the reviewing court to be stricter than the arbitrary or capricious standard. Agency names are replaced by acronyms. For information about these cases, see discussion Part III.

Table 2. Challenges to BCA's Scope

Case Name	Challenge Relevant to BCA	Scope Challenge Examples
Alabama Power Co. v. OSHA, 89 F.3d 740 (11th Cir. 1996)	Challenge to standard addressing clothing requirements for employees who may be exposed to flames or electric arcs	Challenge to BCA as failing to consider costs, but court upheld agency determination that requiring employees to wear flame-resistant clothing had negligible cost
Am. Min. Cong. v. Thomas, 772 F.2d 617 (10th Cir. 1985)	Challenge to standards for the cleanup and disposal of uranium mill tailings originating from designated inactive mill sites	Challenge to rigor of BCA, but court determined that Congress intended a less strict BCA in this case
Arizona Cattle Growers' Ass'n v. Salazar, 606 F.3d 1160 (9th Cir. 2010)	Challenge to critical habitat designation for Mexican-spotted owl	Court determined that the baseline approach for determining benefits and costs of critical habitat designation was permissible
Bus. Roundtable v. SEC, 647 F.3d 1144 (D.C. Cir. 2011)	Challenge to rule requiring companies to provide information to shareholders on voting rights	Court determined that agency BCA was missing too many categories of benefits and costs to be sufficient
Chamber of Commerce of the U.S. v. SEC, 412 F.3d 133 (D.C. Cir. 2005)	Challenge to rule setting conditions under which a mutual fund could engage in certain otherwise prohibited transactions	Court determined that agency BCA failed to adequately consider costs and failed to consider an important alternative
Charter Commc'ns v. FCC, 460 F.3d 31 (D.C. Cir. 2006)	Challenge to refusal to rescind rule prohibiting certain offerings by cable television operators	Challenge to rigor of BCA, but informal, qualitative BCA was deemed adequate
City of Waukesha v. EPA, 320 F.3d 228 (D.C. Cir. 2003)	Challenge to BCA of rule setting limits on naturally occurring uranium in public water systems	Court determined that agency did not need to include costs and benefits of other rules in BCA per statute
Competitive Enter. Inst. v. NHTSA, 901 F.2d 107 (D.C. Cir. 1990)	Challenge to rule establishing corporate average fuel economy standards	Court allowed agency to ignore safety concerns in BCA at this time
Competitive Enter. Inst. v. NHTSA, 956 F.2d 321 (D.C. Cir. 1992)	Challenge to decision to not lower corporate average fuel economy standards	Court determined that agency should have seriously analyzed safety concerns in BCA given the higher standards imposed
Consumer Electronics Ass'n v. FCC, 347 F.3d 291 (D.C. Cir. 2003)	Challenge to rule requiring certain televisions to include specific tuner	Court determined that the assessment of costs was unreasonable
Corrosion Proof Fittings v. EPA, 947 F.2d 1201 (5th Cir. 1991).	Challenge to rule banning asbestos in almost all products	Court determined that BCA did not quantify important benefits, did not consider costs of substitutes, and did not consider any reasonable alternatives to ban
Ctr. for Biological Diversity v. NHTSA, 538 F.3d 1172 (9th Cir. 2008)	Challenge to rule setting corporate average fuel economy standards for light trucks	Court determined that BCA failed to monetize greenhouse gas emissions reductions despite evidence
Gas Appliance Mfrs. Ass'n v. DOE, 998 F.2d 1041 (D.C. Cir. 1993)	Challenge to standby-loss rule affecting water heaters installed in new federal construction projects	Court determined that the BCA failed to adequately consider costs and was not structured as a "coherent marginal analysis"
Inv. Co. Inst. v. CFTC, 720 F.3d 370 (D.C. Cir. 2013)	Challenge to rule adopting heightened disclosure requirements	Challenge to rigor of BCA, but court determined that Congress intended a less strict BCA in this case
Natural Res. Def. Council, Inc. v. Herrington, 768 F.2d 1355 (D.C. Cir. 1985)	Challenge to rules determining that mandatory energy-efficiency standards were not justified for eight types of household appliances	Court determined that BCA's consideration of alternatives was too limited

Case Name	Challenge Relevant to BCA	Scope Challenge Examples
New Mexico Cattle Growers Ass'n v. FWS, 248 F.3d 1277 (10th Cir. 2001)	Challenge to the critical habitat designation for the southwestern willow flycatcher	Court determined that baseline approach in BCA was not permissible
Nw. Envtl. Advocates v. NMFS, 460 F.3d 1125 (9th Cir. 2006)	Challenge to the adequacy of EIS and BCA used in project to deepen Columbia River navigation channel and to propose new sites for disposal of dredged materials	Court determined scope and consideration of benefits and costs was adequate, despite lively dissent
Owner-Operator Indep. Drivers Ass'n v. FMCSA, 494 F.3d 188 (D.C. Cir. 2007)	Challenge to rule establishing hours of service for long-haul truck drivers	Court determined that BCA's consideration of statutorily mandated factors was sufficient
Owner-Operator Indep. Drivers Ass'n v. FMCSA, 656 F.3d 580 (7th Cir. 2011)	Challenge to rule on the use of electronic monitoring devices in commercial trucks	Court determined that BCA did not consider statutorily mandated factor (potential for driver harassment)
Pub. Citizen Health Research Grp. v. Tyson, 796 F.2d 1479 (D.C. Cir. 1986)	Challenge to rule establishing long-term exposure limit for ethylene oxide and to decision not to set a short-term exposure limit on ethylene oxide	Court determined that agency should have considered short-term exposure limit in its rule
Pub. Citizen v. FMCSA, 374 F.3d 1209 (D.C. Cir. 2004)	Challenge to rule revising hours of service for driving and work of commercial drivers	Court determined that BCA did not consider statutorily mandated factor (impact of rule on driver health) and failed to consider other important benefits and costs
Quivira Min. Co. v. NRC, 866 F.2d 1246 (10th Cir. 1989)	Challenge to rule establishing standards for licensing and relicensing uranium mills and uranium mill tailings sites	Challenge to rigor of BCA, but court determined that Congress intended a less strict BCA in this case
Radio Ass'n on Defending Airwave Rights, Inc. v. DOT, 47 F.3d 794 (6th Cir. 1995)	Challenge to rule prohibiting use of radar detectors in commercial motor vehicles	Court determined that agency did not need to consider effects on speed variance or costs of state enforcement
Reynolds Metals Co. v. EPA, 760 F.2d 549 (4th Cir. 1985)	Challenge to rule limiting effluent for can-making industry	Court determined that analysis of incremental costs was permissible and adequate
State of N.Y. v. Reilly, 969 F.2d 1147 (D.C. Cir. 1992)	Challenge to decision not to promulgate two provisions (waste separation provision and a ban on lead-acid vehicle battery combustion)	Court determined that agency should have considered alternatives to ban on battery burning in its BCA before determining action to be cost prohibitive
Webster v. USDA, 685 F.3d 411 (4th Cir. 2012)	Challenge to dam construction	Court determined that BCA could consider benefits and costs of project as a whole and could consider benefits that are incidental to the agency's purpose

Notes: The table does not necessarily summarize all relevant challenges. For information about these cases, see discussion Part III.

Table 3. Challenges to BCA's Methodology or Assumptions

Case Name	Challenge Relevant to BCA	Methodology and Assumptions Challenge Examples
Advocates for Highway & Auto Safety v. FMCSA, 429 F.3d 1136 (D.C. Cir. 2005)	Challenge to rule implementing entry-level training requirements for drivers of commercial vehicles	Court determined that underlying studies did not support benefit calculation under rule
Am. Min. Cong. v. Thomas, 772 F.2d 617 (10th Cir. 1985)	Challenge to standards for the cleanup and disposal of uranium mill tailings originating from designated inactive mill sites	Court upheld BCA despite conservative and inaccurate assumptions that may have overestimated benefits
Am. Trucking Ass'ns v. FMCSA, 724 F.3d 243 (D.C. Cir. 2013), *cert. denied*, 134 S. Ct. 914 (2014)	Challenge to safety-oriented provisions of hours-of-service rule for commercial drivers	Court determined that agency's assumptions and extrapolations in BCA were reasonably based on reliable evidence
Bus. Roundtable v. SEC, 647 F.3d 1144 (D.C. Cir. 2011)	Challenge to rule requiring companies to provide information to shareholders on voting rights	Court determined that agency relied on insufficient empirical data when it considered the benefits
Chem. Mfrs. Ass'n v. EPA, 870 F.2d 177, *decision clarified on reh'g*, 885 F.2d 253 (5th Cir. 1989)	Challenge to rule limiting discharge of waterborne pollutants	Court rejected multiple challenges to the agency's statistical and analytical methodology in BCA
City of Waukesha v. EPA, 320 F.3d 228 (D.C. Cir. 2003)	Challenge to BCA of rule setting limits on naturally occurring uranium in public water systems	Challenges to underlying studies, but court determined that the agency could take risk-averse approach where epidemiological data is uncertain
Consumer Electronics Ass'n v. FCC, 347 F.3d 291 (D.C. Cir. 2003)	Challenge to rule requiring certain televisions to include specific tuner	Court upheld agency decision to eliminate some upper and lower estimates of cost in its BCA
Corrosion Proof Fittings v. EPA, 947 F.2d 1201 (5th Cir. 1991).	Challenge to rule banning asbestos in almost all products	Court rejected various aspects of BCA's methodology and assumptions
Ctr. for Auto Safety v. Peck, 751 F.2d 1336 (D.C. Cir. 1985)	Challenge to rule reducing minimum performance standard for automobile bumpers	Challenges to assumptions in BCA, but court rejected most of these
Ctr. for Biological Diversity v. NHTSA, 538 F.3d 1172 (9th Cir. 2008)	Challenge to rule setting corporate average fuel economy standards for light trucks	Court determined that challenged assumption in BCA was not so implausible that it could not be ascribed to a difference in view or a product of agency expertise
Florida Manufactured Hous. Ass'n v. Cisneros, 53 F.3d 1565 (11th Cir. 1995)	Challenge to strengthened wind-resistance standards for manufactured homes	Court rejected challenges to the underlying data and methodology used to calculate benefits and costs
Gas Appliance Mfrs. Ass'n v. DOE, 998 F.2d 1041 (D.C. Cir. 1993)	Challenge to standby-loss rule affecting water heaters installed in new federal construction projects	Court determined that the underlying computer modeling was faulty and the multiplier for projecting costs was arbitrary, among other things
N. California Power Agency v. FERC, 37 F.3d 1517 (D.C. Cir. 1994)	Challenge to net-benefits calculation in a electric utility hydroelectric projects relicensing proceeding	Court rejected the challenge to the discount rate used to calculate net benefits
Nat'l Wildlife Fed'n v. EPA, 286 F.3d 554 (D.C. Cir. 2002), *supplemented sub nom.* In re Kagan, 351 F.3d 1157 (D.C. Cir. 2003)	Challenge to regulations concerning effluent from bleached "papergrade kraft" subcategory of pulp and paper mill processes	Court rejected the challenge to the model predicting bankruptcies used to estimate costs

Case Name	Challenge Relevant to BCA	Methodology and Assumptions Challenge Examples
Natural Res. Def. Council, Inc. v. Herrington, 768 F.2d 1355 (D.C. Cir. 1985)	Challenge to rules determining that mandatory energy-efficiency standards were not justified for eight types of household appliances	Court rejected challenges to underlying model and discount rate in BCA
Pub. Citizen Health Research Grp. v. Tyson, 796 F.2d 1479 (D.C. Cir. 1986)	Challenge to rule establishing long-term exposure limit for ethylene oxide and to decision not to set a short-term exposure limit on ethylene oxide	Court determined that the cumulative impact of underlying studies supported BCA assumptions
Pub. Citizen v. FMCSA, 374 F.3d 1209 (D.C. Cir. 2004)	Challenge to rule revising hours of service for driving and work of commercial drivers	Court listed several problematic assumptions in BCA, such as the assumption that time spent driving is equally as fatiguing as time spent resting, after rejecting rule based on inadequate scope
Radio Ass'n on Defending Airwave Rights, Inc. v. DOT, 47 F.3d 794 (6th Cir. 1995)	Challenge to rule prohibiting use of radar detectors in commercial motor vehicles	Court found BCA assumptions were adequately supported as reasonable decisions in light of uncertain data
Reynolds Metals Co. v. EPA, 760 F.2d 549 (4th Cir. 1985)	Challenge to rule limiting effluent for can-making industry	After rejecting most challenges to assumptions and methodology, the court acknowledged one possible error but declined to reverse on that ground
State of La., ex rel. Guste v. Verity, 853 F.2d 322 (5th Cir. 1988)	Challenge to regulations on shrimping industry meant to protect sea turtles	Court rejected a challenge to the underlying data connecting the shrimping industry to turtle mortality (although BCA may not have been dispositive in this case)
State of N.Y. v. Reilly, 969 F.2d 1147 (D.C. Cir. 1992)	Challenge to decision not to promulgate two provisions (waste separation provision and a ban on lead-acid vehicle battery combustion)	Court rejected challenges to the sufficiency of evidence and the worst-case scenario methodology in analysis
Webster v. USDA, 685 F.3d 411 (4th Cir. 2012)	Challenge to dam construction	Court upheld agency's use of a high-end estimate in its benefits calculation as within reasonable range

Notes: The table does not necessarily summarize all relevant challenges. For information about these cases, see discussion Part III.

Table 4. Challenges to BCA's Transparency

Case Name	Challenge Relevant to BCA	Transparency Challenge Examples
Am. Trucking Ass'ns v. FMCSA, 724 F.3d 243 (D.C. Cir. 2013), *cert. denied*, 134 S. Ct. 914 (2014)	Challenge to safety-oriented provisions of hours-of-service rule for commercial drivers	Court determined that BCA required explanation of decision to apply 30-minute break to short-haul drivers
Chem. Mfrs. Ass'n v. EPA, 870 F.2d 177, *decision clarified on reh'g*, 885 F.2d 253 (5th Cir. 1989)	Challenge to rule limiting discharge of waterborne pollutants	Although underlying studies and data should be disclosed to the public, court declined to overturn the regulation on this ground in these circumstances
Ctr. for Auto Safety v. Peck, 751 F.2d 1336 (D.C. Cir. 1985)	Challenge to rule reducing minimum performance standard for automobile bumpers	Although methodology should be disclosed, court refused to consider such a challenge when first made on appeal and determined methodology to be part of a common ground of knowledge
Gas Appliance Mfrs. Ass'n v. DOE, 998 F.2d 1041 (D.C. Cir. 1993)	Challenge to standby-loss rule affecting water heaters installed in new federal construction projects	Court determined that cost multiplier was arbitrary partly because the reasoning behind its application to larger commercial market was unexplained
Nat'l Wildlife Fed'n v. EPA, 286 F.3d 554 (D.C. Cir. 2002), *supplemented sub nom.* In re Kagan, 351 F.3d 1157 (D.C. Cir. 2003)	Challenge to regulations concerning effluent from bleached "papergrade kraft" subcategory of pulp and paper mill processes	Court found the BCA's methodology to be adequately explained
Natural Res. Def. Council, Inc. v. Herrington, 768 F.2d 1355 (D.C. Cir. 1985)	Challenge to rules determining that mandatory energy-efficiency standards were not justified for eight types of household appliances	Court encouraged agency to provide more explanation behind its choice of discount rate and more information on its cost model assumptions
Owner-Operator Indep. Drivers Ass'n v. FMCSA, 494 F.3d 188 (D.C. Cir. 2007)	Challenge to rule establishing hours of service for long-haul truck drivers	Court found that agency failed to disclose methodology used to get estimates and multipliers in model used in BCA
Pub. Citizen Health Research Grp. v. Tyson, 796 F.2d 1479 (D.C. Cir. 1986)	Challenge to rule establishing long-term exposure limit for ethylene oxide and to decision not to set a short-term exposure limit on ethylene oxide	Court determined that agency did not sufficiently explain decision not to adopt a short-term exposure limit
Radio Ass'n on Defending Airwave Rights, Inc. v. DOT, 47 F.3d 794 (6th Cir. 1995)	Challenge to rule prohibiting use of radar detectors in commercial motor vehicles	Court found that the speeding numbers in the BCA were sufficiently explained

Notes: The table does not necessarily summarize all relevant challenges. For information about these cases, see discussion Part III.

Table 5. Court Use of BCA as Evidence

Case Name	Challenge Relevant to BCA	BCA-as-Evidence Examples
Advocates for Highway & Auto Safety v. FMCSA, 429 F.3d 1136 (D.C. Cir. 2005)	Challenge to rule implementing entry-level training requirements for drivers of commercial vehicles	Court determined that agency ignored its previous BCA discussing the importance of adequate training to the calculation of benefits
Am. Min. Cong. v. Thomas, 772 F.2d 617 (10th Cir. 1985)	Challenge to standards for the cleanup and disposal of uranium mill tailings originating from designated inactive mill sites	Court used some figures from the EIS as evidence cutting against the rule's estimate of benefits
Gas Appliance Mfrs. Ass'n v. DOE, 998 F.2d 1041 (D.C. Cir. 1993)	Challenge to standby-loss rule affecting water heaters installed in new federal construction projects	Court found that statute required BCA, and agency had not identified any basis for disregarding the outcome of its BCA and imposing a standard that fails the benefit-cost test
Nat'l Truck Equip. Ass'n v. NHTSA, 711 F.3d 662 (6th Cir. 2013)	Challenge to federal motor vehicle safety standard	Although executive order requirements are not judicially enforced, court commented that agency's inference based on the BCA's findings was reasonable
Natural Res. Def. Council, Inc. v. EPA, 824 F.2d 1258 (1st Cir. 1987)	Challenge to standards for long-term disposal of high-level radioactive waste	Court used agency's BCA to support conclusion that agency could have chosen better sites
Pub. Citizen Health Research Grp. v. Tyson, 796 F.2d 1479 (D.C. Cir. 1986)	Challenge to rule establishing long-term exposure limit for ethylene oxide and to decision not to set a short-term exposure limit on ethylene oxide	Although agency abandoned the short-term exposure limit likely due to OMB's encouragement given the BCA, court found agency's refusal to adopt the short-term exposure limit unexplained
Pub. Citizen, Inc. v. Mineta, 340 F.3d 39 (2d Cir. 2003)	Challenge to rule regulating installation of tire pressure monitoring systems in new motor vehicles	Court used the BCA against agency, finding that the rejected option was more cost-effective; on the other hand, court found support for other agency decisions in the BCA
R.J. Reynolds Tobacco Co. v. FDA, 696 F.3d 1205 (D.C. Cir. 2012), *overruled in part by* Am. Meat Inst. v. USDA, 760 F.3d 18 (D.C. Cir. 2014) (en banc)	Challenge to rule requiring display of new textual warnings and graphic images on cigarette packaging	Court used agency's BCA to find that the rule would not advance the government's interest in reducing smoking to a material degree

Notes: The table does not necessarily summarize all relevant challenges. For information about these cases, see discussion Part IV.