Regulatory Impact Analysis: Frequently Asked Questions (FAQs)

February 7, 2011

With this document, the Office of Information and Regulatory Affairs (OIRA) is providing answers to frequently asked questions about the regulatory impact analysis that is required by Executive Order 12866 and OMB Circular A-4.[1] In addition, President Obama signed Executive Order 13563, "Improving Regulation and Regulatory Review," on January 18, 2011; that Executive Order incorporates the requirements of Executive Order 12866 and specifically directs agencies "to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible."

The purpose of this document is to offer answers to questions often asked with respect to regulatory impact analysis; nothing said here is meant to alter existing requirements in any way. For more complete guidance, please consult Executive 13563, Executive Order 12866, and Circular A-4.

1. <u>When do I need to provide a regulatory impact analysis, and what is the definition of "economically significant"?</u>

Executive Order 12866 provides that agencies must submit a regulatory impact analysis for those regulatory actions that are "significant" within the meaning of Section 3(f)(1) – or what Circular A-4 describes as "economically significant."[2] A regulatory action is economically significant if it is anticipated (1) to "[h]ave [1] an annual effect on the economy of $100 million or more" or (2) to "adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities."

The $100 million threshold applies to the impact of the proposed or final regulation in *any one year,* and it includes *benefits, costs, or transfers*. (The word "or" is important: $100 million in annual benefits, *or* costs, *or* transfers is sufficient; $50 million in benefits and $49 million in costs, for example, is not.)

The second criterion – whether the rule would "adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities" – requires careful consideration of the phrase "adversely affect in a material way." There are no hard-and-fast rules here. Suppose, for example, that a regulation (1) would impose $98 million in first-year costs for pollution control equipment, with lower annual costs thereafter, (2) would disproportionately and adversely affect a small sector of the economy, and (3) would threaten to create significant job loss. This rule would be considered economically significant.

The $100 million threshold is identical to the monetary threshold for determining whether a rule is "major" under the Congressional Review Act (CRA). Under that Act, a "major rule" is one that "has resulted in or is likely to result in . . . an annual effect on the economy of $100,000,000 or more."[3] For both Executive Order 12866 and the CRA, the $100 million threshold is not adjusted for inflation (unlike the expenditure threshold contained in the Unfunded Mandates Reform Act[4]). Under the Congressional Review Act, a rule also qualifies as "major" if it has resulted in or is likely to result in "a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions" or "significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic and export markets."[5]

2. How should my regulatory impact analysis be presented to the public?

To inform the public of the expected consequences of regulations, agencies should present their analysis in plain language. To promote transparency and public participation, they should provide a clear executive summary of their central conclusions.[6] They should clearly and prominently include a standardized accounting statement, and are particularly encouraged to do so in the preamble and executive summary.[7] That statement should include one or more tables summarizing their assessment of costs, benefits, and transfers, at both 3% and 7% discount rates.[8] Consistent with Executive Order 13563 and Executive Order 12866, OMB recommends that the tables provide a transparent statement of both quantitative and qualitative benefits and costs of the proposed or planned action as well as of reasonable alternatives.[9] In addition to providing a clear table of aggregate costs and benefits, agencies are strongly encouraged to provide one or more separate tables disaggregating and showing the components of those figures.[10]

In comparing benefits to costs, agencies should emphasize net benefits rather than ratios. As Circular A-4 states, "[t]he size of net benefits, the absolute difference between the projected benefits and costs, indicates whether one policy is more efficient than another. The ratio of benefits to costs is not a meaningful indicator of net benefits and should not be used for that purpose. It is well known that considering such ratios alone can yield misleading results."[11]

3. Can something other than a "market failure" be identified as the "need" for the regulation?

Yes. Executive Order 13563 states, "Where appropriate and permitted by law, each agency may consider (and discuss qualitatively) values that are difficult or impossible to quantify, including equity, human dignity, fairness, and distributive impacts." Circular A-4 states that "you should try to explain whether the action is intended to address a significant market failure *or* to meet some other compelling public need such as improving governmental processes or promoting intangible values such as distributional fairness or privacy."[12] The word "or" is once again significant: if a market failure does not exist but there is a compelling public need for regulation, then the agency should clearly identify the problem that it intends to address and explain and assess the significance of that problem.[13]

4. <u>Even if I have identified a market failure or other need for regulation, should I still consider alternatives to Federal regulation</u>?

Yes. In taking into account a range of alternatives, you should begin by asking whether to regulate at all. Even where a market failure clearly exists, there may be alternatives to Federal regulation, including antitrust enforcement, consumer-initiated litigation in the product liability system, and administrative compensation systems.[14]

You should also consider the option of deferring to regulation at the State or local level. To be sure, problems that affect interstate commerce or spill across State lines may best be addressed by Federal regulation. But more localized problems may be more efficiently addressed locally.[15] In such situations, deferring to state and local regulation can encourage regulatory experimentation and innovation while also fostering learning and competition to establish the best regulatory policies.[16]

There are often questions about the proper relationship among Federal, state, and local requirements. Where Federal regulation is warranted, you should avoid imposing conflicting or duplicative requirements wherever possible. Executive Order 13563 states, "Some sectors and industries face a significant number of regulatory requirements, some of which may be redundant, inconsistent, or overlapping. Greater coordination across agencies could reduce these requirements, thus reducing costs and simplifying and harmonizing rules. In developing regulatory actions and identifying appropriate approaches, each agency shall attempt to promote such coordination, simplification, and harmonization."

While some problems are best handled at the state level, others can be handled through simultaneous regulation from different levels of government. In some cases, however, the increased compliance costs required for firms to meet different State and local regulations may exceed any benefits stemming from the diversity of State and local regulation.[17] With close reference to statutory requirements and governing legal principles, you should consider when and whether it is appropriate to retain State and local regulation.

5. <u>After determining that Federal regulation is the best way to proceed, how do I identify and provide an adequate analysis of "potentially effective and reasonably feasible alternatives" as required by Executive Order 12866</u>?

Executive Order 12866 requires an "assessment, including the underlying analysis, of costs and benefits of potentially effective and reasonably feasible alternatives to the planned regulation" and "an explanation why the planned regulatory action is preferable to the identified potential alternatives."[18] You should ordinarily consider analyzing at least three options: the preferred option; a more stringent option; and a less stringent one.[19]

In some cases, the relevant alternatives might not line up on a continuum of stringency, but might involve different approaches, with distinct advantages and disadvantages. If, for example, an agency is considering banning the sale of a potentially unsafe product, it might consider instead requiring disclosure of health risks to the public. Executive Order 13563 states, "Where relevant, feasible, and consistent with regulatory objectives, and to the extent permitted by law, agencies shall identify and consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public." Warnings, appropriate default rules, and disclosure requirements are examples.

In considering which alternatives to discuss, you should explore which approaches are feasible and plausible ways of meeting the regulatory objective. When the preferred option includes a number of distinct provisions, the benefits and costs of different regulatory provisions should be analyzed separately in order to facilitate consideration of the full range of potential alternatives.[20]

6. What is the appropriate time horizon for estimating costs and benefits?

Executive Order 13563 directs agencies "to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible." When choosing the appropriate time horizon for estimating costs and benefits, agencies should consider how long the regulation being analyzed is likely to have resulting effects. The time horizon begins when the regulatory action is implemented and ends when those effects are expected to cease.[21] Ideally, analysis should include all future costs and benefits. Here as elsewhere, however, a "rule of reason" is appropriate, and the agency should consider for how long it can reasonably predict the future and limit its analysis to this time period. Thus, if a regulation has no predetermined sunset provision, the agency will need to choose the endpoint of its analysis on the basis of a judgment about the foreseeable future. For rules that require large up-front capital investments, the life of the capital is also an option. For most agencies, a standard time period of analysis is 10 to 20 years, and rarely exceeds 50 years.

7. What is a baseline and how do I identify it?

The baseline is the best assessment of how the world would look in the absence of the proposed action during the relevant time horizon. Specifically, the baseline should incorporate the agency's best forecast for how the world will change (if at all) during the identified time horizon, with particular attention to factors such as the evolution of relevant markets; population or economic growth; possible behavioral changes, learning, and adaptation by relevant members of the public; technological changes and advances; and changes in regulations promulgated by the agency or other government entities. Identifying this baseline is necessary to allow assessment of the relative benefits and costs attributable to the proposed action.[22]

For review of an existing regulation or one that simply restates statutory requirements that are self-implementing, a pre-statute baseline, assuming "no change," is appropriate.[23]

Multiple baselines could be appropriate when more than one baseline is reasonable – perhaps because another agency's existing regulation could be implemented in different ways – and the choice would significantly affect estimated benefits and costs.[24]

8. <u>When should I conduct an uncertainty analysis? A sensitivity analysis?</u>

Regulatory analysis requires predictions about the future. What the future holds, both in the baseline and under the regulatory alternative under consideration, is rarely certain. The important uncertainties connected with the regulatory decision should be analyzed and presented as part of the regulatory impact analysis.[25] It is common practice for an agency's uncertainty analysis to present a central "best estimate," which reflects the expected value of the benefits and costs of the rule, as well as a description of the ranges of plausible values for benefits, costs, and net benefits. This description informs the decision-makers and the public of the degree of uncertainty associated with the regulatory decision.[26]

In general, you should also include a "sensitivity analysis" that shows how results of your analysis vary with plausible changes in assumptions, choices of input data, and alternative analytical approaches.[27] The level of detail in the analysis can vary with the expected effects of the rule; you should use more rigorous analytical approaches, and more comprehensive sensitivity analysis, for rules with especially large consequences. For rules that exceed the $1 billion annual threshold, Circular A-4 states that "a formal quantitative analysis of uncertainty is required."

9. <u>What is the difference between a transfer and a cost</u>?

Costs affect the total resources available to society. Transfer payments are monetary payments from one group to another that do not affect total resources.[28] The agency should not include transfer payments in its estimates of the benefits and costs of a regulation. Instead, it should address them in a separate discussion of the distributional effects of the regulation.[29] Distinguishing between real costs and transfer payments is an important, but sometimes difficult, problem in cost estimation.

Examples of costs include:

- Expenditures, including goods and services, required to comply with the regulation
- Reductions in consumer and producer well-being resulting from regulation-induced price or quantity changes
- Increases in premature death, illness, or disability (e.g., in the case where a regulation that would reduce certain safety risks would have the consequence of increasing other safety risks).

Examples of transfers include:

- Fees to government agencies for goods or services already provided by the agency (that is, monetary transfers from feepayers to the government—because the goods and services are already counted as government costs, including them as private costs would entail double counting)
- Increases in sales tax revenue as a result of increases in sales (that is, monetary transfers from consumers to government)
- Payments by the Federal government for goods or services provided by the private sector (that is, monetary transfers by the government to service providers, such as reimbursements by the Medicare program)
- Reductions in sales by one business that are matched by increases in sales by another (that is, transfers in economic activity from one business to another)
- Reductions in resources for some consumers that are matched by increases for others (that is, transfers of resources among consumers)[30]

10. Why must I present the estimates using both 3% and 7% discount rates?

The 7 percent rate is a recent estimate of the average before-tax rate of return to private capital in the U.S. economy. It is a broad measure that reflects the returns to real estate and small business capital in the private sector.[31] The effects of regulation, however, do not always fall exclusively or primarily on the allocation of capital. When regulation primarily and directly affects private consumption (e.g., through higher consumer prices for goods and services), a lower discount rate is appropriate. The alternative most often used is sometimes called the "social rate of time preference," which simply means the rate at which "society" discounts future consumption flows to their present value. If we use the rate that the average saver uses to discount future consumption as our measure, then the real rate of return on long-term government debt provides a fair approximation. Historically, this rate has averaged around 3 percent in real terms on a pre-tax basis.[32]

Special considerations arise when comparing benefits and costs across generations. If the regulatory action will have important intergenerational benefits or costs, the agency should consider a sensitivity analysis, using a lower but positive discount rate, in addition to calculating net benefits using discount rates of 3 percent and 7 percent.[33]

11. How do I value time?

Some regulations require people to spend time on certain activities to comply with their provisions – as, for example, through paperwork or monitoring. The costs of such requirements should be described both in terms of hours and to the extent feasible, in terms of monetary equivalents. In order to value the cost of time, agencies should consider what those people would be doing with their time if they did not need to comply with the regulations.[34] The resulting figures, like all other costs and benefits, should be annualized (see below). As a general rule, workers' hourly wages can be used as a proxy for the value of the time that they could have spent doing other work. If the regulation requires paperwork, it may be appropriate to value the relevant time at the hourly wage for the workers asked to complete the required tasks. If specific expertise is needed to complete those tasks, the average wages of workers with that expertise should be used. If, for example, the regulation will require software changes by computer programmers, it would be appropriate to use the wages of computer programmers.

In some cases, regulations will result in time savings for individuals, and such savings should be described both in terms of hours saved and to the extent feasible, in terms of monetary equivalents. Monetized estimates should include a measure of the value of that time calculated in the same way as costs. If the time saved is not work, it is appropriate to try to estimate people's willingness to pay for the improvement. This estimate attempts to measure what individuals would be willing to pay to enjoy the particular benefit of time saved for the relevant activity.[35]

Sometimes regulations do not save time, but do lead to improvements in the quality of time spent on an activity. An example would be a regulation that requires airlines to provide adequate food and potable water to passengers within two hours of being delayed in an aircraft grounded on the tarmac. The regulation would not shorten people's waiting time, but would improve the quality of that waiting time. In this case, it is appropriate to try to estimate people's willingness to pay for the improvement. Studies or surveys of individuals in similar circumstances may be available to use as a reference point for estimates.

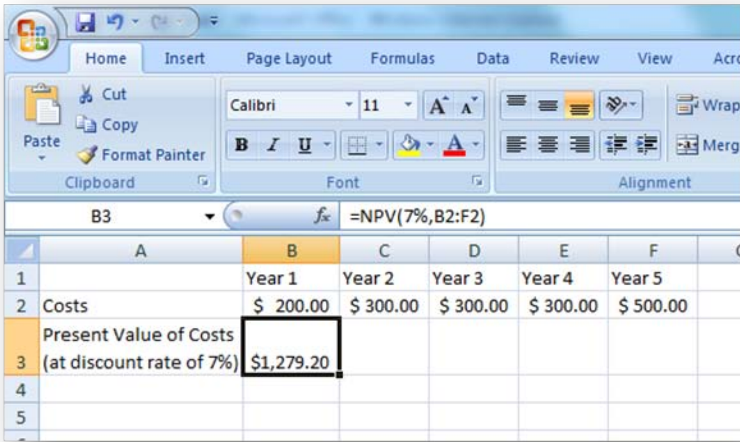
12. How do I annualize?

As part of a regulatory analysis, agencies are asked to provide estimates of the annualized costs and benefits of a regulation.[36] Under this requirement, agencies should take a stream of future benefits and costs of the rule and estimate its approximate yearly costs and benefits. The first step in the annualization of costs is to find the present value of the stream of future costs. To find that value, each year's expected costs should be discounted back to the present using the following formula:

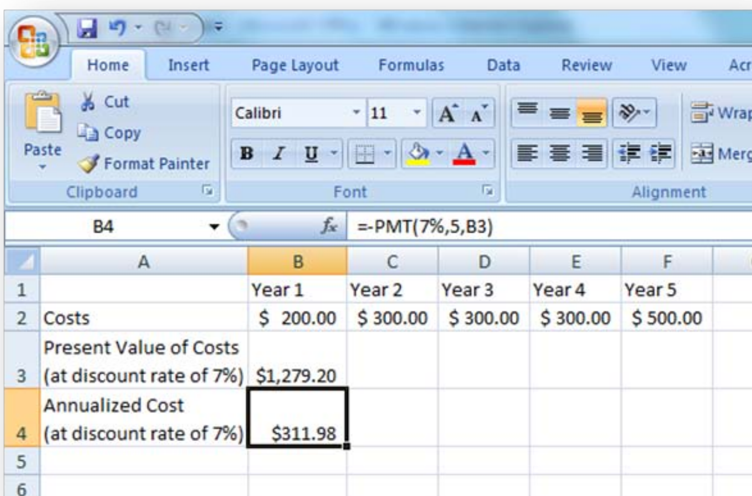
$$Present\ Value\ of\ Year\ T's\ Costs = \frac{C_t}{(1+i)^t}$$

where C_t is the cost t years in the future and i is the discount rate.

Then, each year's discounted costs should be added together to find the present value of costs. If you are using an Excel spreadsheet, you can use the NPV (Net Present Value) function to calculate the present value of costs from a set of future costs, as follows:



The next step is to compute an annualized cost from this present value. This step is akin to spreading the costs equally over each period, taking account of the discount rate. If you are using Excel, an easy way to compute this amount is to use the PMT function, which calculates the annualized amount needed over a number of years to equal a given present value at a particular discount rate. The formula returns a negative number, so the result should be multiplied by -1 to obtain the annualized cost.



Annualized benefits can be computed from a stream of expected future benefits using the same method.

[1] Executive Order 12866 is available at: http://www.whitehouse.gov/sites/default/files/omb/inforeg/eo12866.pdf. Circular A-4 is available at: http://www.whitehouse.gov/sites/default/files/omb/assets/regulatory_matters_pdf/a-4.pdf.

[2] Executive Order 12866 refers to "those matters identified as, or determined by the Administrator of OIRA to be, a significant regulatory action within the scope of section 3(f)(1)." Circular A-4 states that "Executive Order 12866 requires agencies to conduct a regulatory analysis for economically significant regulatory actions as defined by Section 3(f)(1)." (P. 1).

[3] 5 U.S.C. § 804(2).

[4] Under the Unfunded Mandates Reform Act, each agency must prepare a benefit-cost analysis "before promulgating any general notice of proposed rulemaking that is likely to result in promulgation of any rule" that "includes any Federal mandate that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of $100,000,000 or more (adjusted annually for inflation) in any 1 year." 2 U.S.C. §1532. For such rules, with limited exceptions, the "agency shall identify and consider a reasonable number of regulatory alternatives and from those alternatives select the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule, for (1) State, local, and tribal governments, in the case of a rule containing a Federal intergovernmental mandate; and (2) the private sector, in the case of a rule containing a Federal private sector mandate." 2 U.S.C. §1535.

[5] *Id.* See also "Guidance for Implementing the Congressional Review Act," M-99-13, available at http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m99-13.pdf. Note that these alternative tests for a "major rule" under the CRA are not the same as the second criterion under Executive Order 12866 (to "adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities"); by contrast, the CRA's language is drawn from Executive Order 12291, which was revoked in 1993. See Executive Order 12291, §1(b), available at http://www.archives.gov/federal-register/codification/executive-order/12291.html; Executive Order 12866, §11 ("Executive Order Nos. 12291 and 12498; all amendments to those Executive orders; all guidelines issued under those orders; and any exemptions from those orders heretofore granted for any category of rule are revoked.").

[6] Circular A-4 states: "Your analysis should . . . have an executive summary." (P. 3).

[7] Circular A-4 states that "[y]our analysis should . . . have an executive summary, including a standardized accounting statement." (P. 3). It also states that "[y]ou need to provide an accounting statement with tables reporting benefit and cost estimate for each major final rule for your agency." (P. 44). See also OMB's "2010 Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities," available at http://www.whitehouse.gov/sites/default/files/omb/legislative/reports/2010_Benefit_Cost_Report.pdf. This report states that:

> For all economically significant regulatory actions, we recommend that agencies should clearly and prominently present, in the preamble and in the executive summary of the regulatory impact analysis, one or more tables summarizing the assessment of costs and benefits required under Executive Order 12866 Section 6(a)(3)(C)(i)-(iii). The tables should provide a transparent statement of both quantitative and qualitative benefits and costs of the proposed or planned action as well as of reasonable alternatives. The tables should include all relevant information that can be quantified and monetized, along with relevant information that can be described only in qualitative terms . . . . To the extent feasible in light of the nature of the issue and the relevant data, all benefits and costs should be quantified and monetized. To communicate any uncertainties, we recommend that the table should offer a range of values, in addition to best estimates, and it should clearly indicate impacts that cannot be quantified or monetized. If nonquantifiable variables are involved, they should be clearly identified. Agencies should attempt, to the extent feasible, not merely to identify such variables but also to signify their importance.
> (P. 51).

[8] Under the heading of "Accounting Statement," Circular A-4 states that "[y]ou should present undiscounted streams of benefit and cost estimates (monetized and net) for each year of the analytic time horizon. You should present annualized benefits and costs using real discount rates of 3 and 7 percent." (P. 45).

[9] Circular A-4 states: "The analysis document should discuss the expected benefits and costs of the selected regulatory option and any reasonable alternatives . . . . To present your results, you should: include separate schedules of the monetized benefits and costs that show the type and timing of benefits and costs, and express the estimates in this table in constant, undiscounted dollars . . . ; list the benefits and costs you can quantify, but cannot

monetize, including their timing; describe benefits and costs you cannot quantify; and identify or cross-reference the data or studies on which you base the benefit and cost estimates." (P. 18).

[10] See OMB's "2010 Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities," available at http://www.whitehouse.gov/sites/default/files/omb/legislative/reports/2010_Benefit_Cost_Report.pdf. It states that "[i]t will often be useful to accompany a simple, clear table of aggregated costs and benefits with a separate table offering disaggregated figures, showing the components of the aggregate figures." (P. 51).

[11] See p. 10 of Circular A-4.

[12] See p. 4 of Circular A-4.

[13] Executive Order 12866 states that "Federal agencies should promulgate only such regulations as are required by law, are necessary to interpret the law, or are made necessary by compelling public need, such as material failures of private markets to protect or improve the health and safety of the public, the environment, or the well-being of the American people." Circular A-4 states that "you should try to explain whether the action is intended to address a significant market failure or to meet some other compelling public need such as improving governmental processes or promoting intangible values such as distributional fairness or privacy." (P. 4).

[14] Circular A-4 states: "Even where a market failure exists, you should consider other means of dealing with the failure before turning to Federal regulation. Alternatives to Federal regulation include antitrust enforcement, consumer-initiated litigation in the product liability system, or administrative compensation systems. In assessing whether Federal regulation is the best solution, you should also consider the possibility of regulation at the State or local level. In some cases, the nature of the market failure may itself suggest the most appropriate level of governmental level of regulation." (P. 5)

[15] Circular A-4 states: "In assessing whether Federal regulation is the best solution, you should also consider the possibility of regulation at the State or local level. In some cases, the nature of the market failure may itself suggest the most appropriate governmental level of regulation. For example, problems that spill across State lines (such as acid rain whose precursors are transported widely in the atmosphere) are probably best addressed by Federal regulation. More localized problems, including those that are common to many areas, may be more efficiently addressed locally." (P. 6).

[16] Circular A-4 states: "The advantages of leaving regulatory issues to State and local authorities can be substantial. If public values and preferences differ by region, those differences can be reflected in varying State and local regulatory policies. Moreover, States and localities can serve as a testing ground for experimentation with alternative regulatory policies. One State can learn from another's experience while local jurisdictions may compete with each other to establish the best regulatory policies. You should examine the proper extent of State and local discretion in your rulemaking context." (P. 6).

[17] Circular A-4 states: "Where Federal regulation is clearly appropriate to address interstate commerce issues, you should try to examine whether it would be more efficient to retain or reduce State and local regulation. The local benefits of State regulation may not justify the national costs of a fragmented regulatory system. For example, the increased compliance costs for firms to meet different State and local regulations may exceed any advantages associated with the diversity of State and local regulation. Your analysis should consider the possibility of reducing as well as expanding State and local rulemaking." (P. 6).

[18] See Section 6(a)(3)(C) of Executive Order 12866.

[19] Circular A-4 states: "In general, both the benefits and costs associated with a regulation will increase with the level of stringency (although marginal costs generally increase with stringency, whereas marginal benefits may decrease). You should study alternative levels of stringency to understand more fully the relationship between stringency and the size and distribution of benefits and costs among different groups." (P. 8).

[20] Circular A-4 states that when "consider[ing] alternative regulatory approaches," there "must be some balance between thoroughness and the practical limits on your analytical capacity. With this qualification in mind, you should nevertheless explore modifications of some or all of a regulation's attributes or provisions to identify appropriate alternatives." (P. 7).

[21] Circular A-4 states: "You should present undiscounted streams of benefit and cost estimates (monetized and net) for each year of the analytic time horizon." (P. 45). A-4 also provides that "you should present the annual time stream of benefits and costs expected to result from the rule, clearly identifying when the benefits and costs are expected to occur. The beginning point for your stream of estimates should be the year in which the final rule will begin to have effects, even if that is expected to be some time in the future. The ending point should be far enough in the future to encompass all the significant benefits and costs likely to result from the rule." (P. 31).

[22] Circular A-4 states that “[y]ou need to measure the benefits and costs of a rule against a baseline. This baseline should be the best assessment of the way the world would look absent the proposed action. The choice of an appropriate baseline may require consideration of a wide range of potential factors, including: evolution of the market, changes in external factors affecting expected benefits and costs, changes in regulations promulgated by the agency or other government entities, and the degree of compliance by regulated entities with other regulations.” (P. 15).

[23] Circular A-4 states: “It may be reasonable to forecast that the world absent the regulation will resemble the present. If this is the case, however, your baseline should reflect the future effect of current government programs and policies. For review of an existing regulation, a baseline assuming ‘no change’ in the regulatory program generally provides an appropriate basis for evaluating regulatory alternatives. . . . In some cases, substantial portions of a rule may simply restate statutory requirements that would be self-implementing, even in the absence of the regulatory action. In these cases, you should use a pre-statute baseline.” (PP. 15-16).

[24] Circular A-4 states: “When more than one baseline is reasonable and the choice of baseline will significantly affect estimated benefits and costs, you should consider measuring benefits and costs against alternative baselines. In doing so you can analyze the effects on benefits and costs of making different assumptions about other agencies’ regulations, or the degree of compliance with your own existing rules. In all cases, you must evaluate benefits and costs against the same baseline.” (P. 15).

[25] Circular A-4 states that the “important uncertainties connected with your regulatory decisions need to be analyzed and presented as part of the overall regulatory analysis.” (P. 38).

[26] Circular A-4 states: “Where there is a distribution of outcomes, you will often find it useful to emphasize summary statistics or figures that can be readily understood and compared to achieve the broadest public understanding of your findings. It is a common practice to compare the ‘best estimate’ of both benefits and costs with those of competing alternatives. These ‘best estimates’ are usually the average or the expected value of benefits and costs.” (P. 48).

[27] Circular A-4 states: “Use a numerical sensitivity analysis to examine how the results of your analysis vary with plausible changes in assumptions, choices of input data, and alternative analytical approaches.” (P. 41).

[28] This general statement does not take into account the potential inefficiencies that may arise from taxation (other than lump-sum taxation). Transfer payments could affect total resources available to society because of the marginal cost of public funds.

[29] Circular A-4 states: “You should report transfers, separately and avoid and misclassification of transfer payments as benefits or costs. Transfers occur when wealth or income is redistributed without any direct change in aggregate social welfare.” (P. 46).

[30] Circular A-4 states: “A regulation that restricts the supply of a good, causing its price to rise, produces a transfer from buyers to sellers. The net reduction in the total surplus (consumer plus producer) is a real cost to society, but the transfer from buyers to sellers resulting from a higher price is not a real cost since the net reduction automatically accounts for the transfer from buyers to sellers.” (P. 38).

[31] Circular A-4 states: “The 7 percent rate is an estimate of the average before-tax rate of return to private capital in the U.S. economy. It is a broad measure that reflects the returns to real estate and small business capital as well as corporate capital. It approximates the opportunity cost of capital, and it is the appropriate discount rate whenever the main effect of a regulation is to displace or alter the use of capital in the private sector.” (P. 33).

[32] Circular A-4 provides: “The effects of regulation do not always fall exclusively or primarily on the allocation of capital. When regulation primarily and directly affects private consumption (e.g., through higher consumer prices for goods and services), a lower discount rate is appropriate. The alternative most often used is sometimes called the ‘social rate of time preference.’ This simply means the rate at which ‘society’ discounts future consumption flows to their present value. If we take the rate that the average saver uses to discount future consumption as our measure of the social rate of time preference, then the real rate of return on long-term government debt may provide a fair approximation. Over the last thirty years, this rate has averaged around 3 percent in real terms on a pre-tax basis.” (P. 33).

[33] Circular A-4 offers a brief relevant background on economic and ethical issues and states: “If your rule will have important intergenerational benefits or costs you might consider a further sensitivity analysis using a lower but positive discount rate in addition to calculating net benefits using discount rates of 3 and 7 percent.” (P. 36).

[34] Circular A-4 states: “You should include [other benefit and cost considerations] in your analysis and provide estimates of their monetary values when they are significant: [p]rivate-sector compliance costs and savings; [g]overnment administrative costs and savings; [g]ains or losses in consumers’ or producers’ surpluses; [d]iscomfort

or inconvenience costs and benefits; and [g]ains or losses of time in work, leisure and/or commuting/travel settings." (P. 37).

[35] According to Circular A-4, "[o]pportunity cost is the appropriate concept for valuing both benefits and costs. The principle of 'willingness-to-pay' (WTP) captures the notion of opportunity cost by measuring what individuals are willing to forgo to enjoy a particular benefit." (P. 18). Circular A-4 adds: "In general, economists tend to view WTP as the most appropriate measure of opportunity cost, but an individual's 'willingness-to-accept' (WTA) compensation for not receiving the improvement can also provide a valid measure of opportunity cost." Hence it may be valid for agencies to consider use of WTA. See pp. 18-19 of Circular A-4 for a general discussion of the concept of "willingness to pay."

[36] Circular A-4 states: "As a first step, you should present the annual time stream of benefits and costs expected to result from the rule, clearly identifying when the benefits and costs are expected to occur . . . . Benefits and costs that occur sooner are generally more valuable . . . . To reflect this preference, a discount factor should be used to adjust the estimated benefits and costs for differences in timing. The further in the future the benefits and costs are expected to occur, the more they should be discounted. The discount factor can be calculated given a discount rate." (PP. 31-32). It also states that "[y]ou should present annualized benefits and costs . . ." (P. 45).