

Appendix 5B: Summaries of Individual Interviews

Respondent A

Tables

Policymaker A understood the table of physical effects and made cost-effectiveness calculations from the information in the table. Policymaker A refused to decide on the basis of this information, saying that far more information was needed, especially more context about what had already been achieved with the Clean Air Interstate Rule (CAIR). When shown the monetized benefits of the two options, Policymaker A was inclined to choose to do nothing, given that the best estimate for net benefits was zero and wide uncertainties were associated with both policies.

Charts

Policymaker A said that the pie chart was not all that helpful and could be omitted but cautioned that one tends to lock into a decision early on and interpret evidence as reaffirming their preconceptions. Policymaker A said the box plot was not helpful but found the probability density function (PDF) useful. The PDF made the intermediate option more attractive because of the tighter variance around the option. Policymaker A required explanation about the cumulative distribution function (CDF) and said it was somewhat helpful but would like require detailed explanation for most decisionmakers. Policymaker A did not find the sources of uncertainty graph very useful because it showed that mortality as being the biggest driver, and this was the assumption from the outset.

Views on Uncertainty

Policymaker A said that getting information about the uncertainties was important to the decisionmaking process. On the question of comfort with delegation, Policymaker A favored building in a process with inherent checks and balances (e.g., having two separate offices look at the regulation). In addition, Policymaker A noted that it is important to have a trusted technical adviser.

Decision

Overall, Policymaker A was inclined to do nothing but after seeing the PDF said the intermediate option became somewhat more attractive. But then Policymaker A added that the information in the presentation was only a small part of what would go into an actual decision.

Other Thoughts

Overall, Policymaker A said that more context was needed, especially on the baseline. Policymaker A expressed a preference for cost-effectiveness information (e.g., dollar-per-ton cost for CAIR). This would provide context for how the proposed regulation compares to what the agency is currently doing. Policymaker A also expressed a desire for information on the cost per ton for other rules outside the power sector.

Policymaker A also noted that there are important differences based on the background of decisionmakers. Those with a technical background are more comfortable with the kind of presentation that was used in this project. However, many decisionmakers are lawyers who, in Policymaker A's opinion, are more comfortable with an argument-based approach that lays out the pros and cons of the different options.

Policymaker A noted that in many presentations, three options are presented to the decisionmaker: (a) do nothing, (b) a draconian policy, and (c) the prechosen option.

Respondent B

Tables

Policymaker B said that Table 5-1 should provide more information on what you were getting per incremental expenditure (i.e., cost-effectiveness analysis). Policymaker B did not find the confidence interval interesting and instead focused on mean values because the distribution was more or less symmetric around the mean

Policymaker B said that the net benefits were not helpful; they only tell you that monetization does not help your decision. For the purposes of making the decision, Policymaker B would focus solely on the physical effects.

Charts

Policymaker B didn't think that the pie chart was very helpful for this decision but could imagine cases in which it might be helpful, if the distribution was skewed in some way. Policymaker B understood the box-and-whisker plots and said they were helpful but also said that the presentation (in terms of net benefits) collapsed too much information. Policymaker B would have preferred to see benefits and costs separated out. Policymaker B preferred the PDF to the pie chart, the box-and-whisker plots, and the CDF, saying it was easier to conceptualize.

Policymaker B found the chart on the sources of uncertainty somewhat useful but not central; it helped identify which elements were based on mode versus statistical uncertainty (although Policymaker B did not use these exact terms): "If the uncertainty is coming from population projections, I can do something about that—choose which one I think is most reasonable. If it's coming from the science, I can't do much about that."

Views on Uncertainty

Policymaker B said that information about uncertainties was helpful. In the past, Policymaker B had had to make decisions that possibly had zero benefits, so in this case it was good to know that both options had positive benefits over the plausible ranges."

Policymaker B was comfortable delegating to staff: "If you weren't comfortable with it, you would either quit or go insane. That's why you have a staff."

Decision

Policymaker B said that more information was needed but, if forced to choose, would go for the stringent option because of its potential for higher benefits. Consistent in this choice throughout the presentation, Policymaker B was willing to trade off the possibility of higher net costs for the potential of very high absolute and net benefits.

Other Thoughts

Policymaker B said that the majority of decisionmakers are lawyers and had the impression that lawyers are trained to be averse to uncertainty.

Respondent C

Tables

Policymaker C attempted to estimate the cost per life saved from the information in Table 5-1 and noted that results were the same for both options. Because the costs per life saved were the same, Policymaker C was inclined to go for the stringent option.

Table 5-2 inclined Policymaker C to do nothing or everything: “You’re either dead wrong or you’re right in a big way.” Policymaker C noted that the cost estimates were fixed, when in fact there is uncertainty around costs. Policymaker C’s impression was that costs are usually overestimated.

Charts

Policymaker C found the pie chart helpful, both for showing that there was little difference in the probability of net benefits for the two options and for showing that the probability was slightly above 50%. Policymaker C found the box-and-whisker plots confusing and said some of this was because of the metric; it would more helpful to break out total benefits from net benefits. The box-and-whisker plot made the no-policy option more attractive.

Policymaker C said that the PDF was the first of the materials presented that made the intermediate option attractive; it showed less risk with the intermediate option. Policymaker C also pointed out that a cap-and-trade policy is less susceptible to promoting technological lock-in across the industry, so a decision to take an intermediate approach wouldn’t lead to wasted capital investment—unlike other technology standards, where going tighter later on would require premature retirement of capital equipment.

Policymaker C did not find the CDF helpful. Policymaker C was interested in the sources of uncertainty graph and asked that it be shown at the beginning of the presentation

Views on Uncertainty

Policymaker C said that information on uncertainty was very valuable and suggested that the graph showing sources of uncertainty be moved up in the presentation. As a

policymaker, Policymaker C had asked staff to conduct sensitivity analysis and look for the knee of the curve.

Regarding comfort level with delegation of the analysis to staff, Policymaker C said that senior decisionmakers often don't know what they have delegated. "They don't know what they don't know. ... I often find out more and more about what I didn't know when I made a particular decision."

Decision

Policymaker C began by gravitating toward the stringent and do-nothing options but eventually favored the intermediate option; the PDF appeared to be the key graphic. Policymaker C based this decision on the fact that the standard could always be tightened subsequently.

Other Thoughts

Policymaker C focused on cost-effectiveness: "How much are you getting for what you are paying?" Policymaker C acknowledged that political considerations often are important, but policymakers should "get the facts first before you bring on the politics. ... If you do the politics first, you will get confused. In the end, you want to know how far you've moved from the most analytically defensible option."

Respondent D

Tables

Policymaker D noted that the relationship between the two policies was linear except for respiratory admissions, which improved at a greater rate at the stringent policy. Policymaker D said that a presentation of cost curves would be helpful to identify whether there was any elbow at the cost per ton, even though Table 5-1 appeared to present a linear relationship. Policymaker D also wanted more information, in particular, "Why did they stop where they did with CAIR?"

Policymaker D said that Table 5-2 was helpful because it allowed for an apples-to-apples comparison, but that it must be presented in conjunction with the physical effects table. Policymaker D said that this is especially true as you prepare to

communicate it, because the public understands the physical effects but is less familiar with monetization. On the basis of the table, Policymaker D chose the tighter graph, because the net benefits were the same, but the stringent policy yielded much more health benefits for the same net benefits.

Charts

Policymaker D wanted an explanation for the pie chart and said it was slightly helpful and provided some degree of confidence in the decision about choosing the stringent option. Policymaker D said that the box-and-whisker plot did not add much information but did highlight the lower bound of net benefits. Policymaker D thought that skeptics of the regulations would seize upon this number. Policymaker D still favored the stringent standard on the grounds that costs were probably overestimated and that there were nonmonetized benefits.

Policymaker D found the PDF more persuasive than the box-and-whisker plot. It made the intermediate option more attractive because of the reduced possibility of large negative net benefits. When asked whether this change of opinion reflected a willingness to trade off the possibility of very large net benefits to reduce the downside risk, Policymaker D responded that the PDF was a good presentation form because it enabled a discussion of that issue.

Policymaker D felt that the PDF biased the decisionmaker toward the narrow band, whereas the CDF seemed to be a more neutral presentation. On the CDF, Policymaker D noticed that the two lines were not all that different.

Policymaker D said the uncertainty graph was extremely helpful. "The important thing is to know what is driving the uncertainties." We then showed the sources of uncertainty graph to Policymaker D, who responded, "What this shows me is that the big driver of the uncertainties is mortality."

Views on Uncertainty

Policymaker D said that understanding uncertainties was important but not the most important factor in making the decision. In this case study, the uncertainties were not very compelling, in Policymaker D's view, because the two options did not offer a lot of choice.

Policy maker D also wanted to see any information that potential critics might see: "If OMB [the Office of Management and Budget] has it, I want to have it, so I know what I'm up against. Uncertainty can be very helpful, especially if the ranges are all above zero. Then I know I can do no wrong." Policy maker D added that critics will seize on the extreme numbers: "OMB will focus like a laser on that lower bound, whereas environmentalists will focus on the upper bound."

Policy maker D said that the response to the delegation issue is to set up a formal process with checks and balances. A decision maker has no choice but to rely on staff.

Decision

Policy maker D was inclined toward the most stringent option, but said much would depend on context

Other Thoughts

Policy maker D said that a lot depends on the center of balance in the administration. A decision maker might be inclined to go with the stringent option in a Democratic administration but the intermediate option in a Republican administration. Policy maker D also pointed out that uncertainty in some ways arms your opponents, who will seize on those lower-bound numbers. The most effective counterargument may be to bring in political considerations and the law.

Policy maker D wanted to know more about the context: "How much is already out there? How big is the problem? Is it bigger than a bread box? Also, how are costs and benefits distributed, especially geographically and among industry? If a group like the Midwest Governors will be screaming, can you point out to them that they will be getting benefits, too?"

Respondent E

Tables

Policy maker E said that presentations usually offer two extreme options and a sensible middle option; this case offered only two options. Policy maker E noted that both costs

and physical impacts seemed linear. Policymaker E had seen confidence intervals presented before but said that the focus usually had been on best estimates.

Policymaker E found the table of benefits helpful but insufficient to make a decision; it was helpful when combined with the physical effects table. Policymaker E was somewhat skeptical of monetization.

Charts

Policymaker E said that the pie chart was not very helpful and suggested dividing the pie into three or more slices, with one slice representing a central area (e.g., \pm \$1 million in net benefits).

Policymaker E had experience with box-and-whisker plots and said that for the policy choice presented in the exercise, the graphic was not very helpful. Policymaker E said that the box-and-whisker focused attention on the middle ranges and less on the spread, and as a result, the two policies did not seem that different. Policymaker E added that that it would be better to present total benefits rather than net benefits with this chart.

Policymaker E understood the PDF and said that it did not give much more information than the box-and-whisker plot. Policymaker E said that it was harder to read numbers with the PDF but probably would be better for presenting to most decisionmakers because the PDF is more intuitive. Policymaker E said the CDF would be very hard to explain to most policymakers and would require a great deal of context. Policymaker E suggested comparing the CDFs for the new policy options with CDFs for previous policies (e.g., CAIR). Policymaker E added that tables are probably the easiest for conveying information to nontechnical policymakers.

Policymaker E said that the uncertainty chart was helpful and asked about the quality of the underlying studies, particularly the mortality estimates, which had a very large range.

Views on Uncertainty

Policymaker E said that information about uncertainty in the analysis is very helpful but that the presentation needed much more information on what factors were driving the uncertainty and more discussion about the quality of the underlying studies.

On the delegation issue, Policymaker E said that it would be good to get outsiders (e.g., U.S. Environmental Protection Agency's [EPA's] Science Advisory Board or CASAC) to bless the techniques used. This would give decisionmakers increased confidence. Policymaker E noted that OMB does not have a tradition of bringing in outsiders or peer review.

Decision

Overall, Policymaker E leaned in favor of the stringent option because of the linearity in costs and benefits. However, because of the higher risk of negative net benefits with the stringent option, Policymaker E would prepare both options with a recommendation for the stringent and then wait for information from public comments..

Other Thoughts

Policymaker E was interested in distributional impacts, particularly on the cost side, to determine whether burdens were widely dispersed or focused on a few small operators. In addition, Policymaker E wanted to see cost-effectiveness numbers.

Respondent F

Tables

Policymaker F found the physical effects table more informative than the net benefits table, adding that the wide uncertainties raised questions about what factors were driving the uncertainty. The wide spread around mortality showed the need for more information. Policymaker F noted that the spreads around the mean estimates appeared symmetric.

Policymaker F said that the benefits table was somewhat helpful, but only in conjunction with the physical effects table. Policymaker F was not prepared to make a decision after seeing both tables.

Charts

Policymaker F said the pie chart was useful on showing the center of gravity. It did not “turn the tide” but helped Policymaker F feel more comfortable choosing the stringent or intermediate option.

Policymaker F found the box-and-whisker chart repetitious (providing basically the same information as the table). Policymaker F found the PDF more valuable and said it made the intermediate option more attractive. Policymaker F said that the CDF also was helpful and reaffirmed the attractiveness of the intermediate policy.

Policymaker F said the graph on the sources of the key graph in the presentation highlighted the need for more information. Policymaker F said this graph {which we showed in the beginning} was the key graph. Policymaker F said this is the key issue and would need a lot more information and to know the bigger picture options before actually making a decision: What are the experts saying? What is the cost per ton reduced in other regulations?

Views on Uncertainty

Policymaker F said that uncertainty information was extremely helpful, particularly about the sources of uncertainty. As a decisionmaker, Policymaker F said it was important to know how confident to be in the analysis. Policymaker F said it is unfair to place two rules on equal footing, when one has a tremendous amount of data and study behind it and the other is characterized by large uncertainties.

Policymaker F said that it was important to set the process up with inherent discipline (e.g., consulting outsiders and different offices within EPA). Policymaker F said that setting up a healthy debate gives the decisionmaker more confidence about the decision and more confidence in delegating technical aspects of the process.

Decision

Overall, Policymaker F said the presentation produced skepticism about extreme options and therefore chose the intermediate option.

Other Thoughts

Policymaker F expressed a preference for cost-effectiveness numbers, such as dollar per ton reduced, and also was interested in opportunity costs (e.g., how does this regulation stack up with other options?).

In a real-world situation, Policymaker F would ask many detailed questions, including opinions from OMB and various stakeholders. Policymaker F also would like to have an internal debate: “I can remember being moved by how strongly people made the case.”

Respondent G

Tables

Policymaker G said that the physical effects chart was helpful but wanted to see the presentation in terms of costs and benefits. After seeing the net benefit table, Policymaker G chose the intermediate option.

Charts

Policymaker G said that the pie chart was helpful and reinforced the decision to go with the intermediate option. Policymaker G did not find the box-and-whisker particularly helpful. Both the PDF and CDF were helpful for Policymaker G and confirmed the attractiveness of the intermediate option: “I’m looking for a sure thing.” Having already assumed that mortality was the big driver of the uncertainties, Policymaker G did not find the sources of uncertainty chart helpful.

Views on Uncertainty

Policymaker G said that information on uncertainty was “not just helpful; it is essential” —adding that it was important to understand these issues if you are going out to make the case for the regulation.

Policymaker G said that delegation was necessary but that policymakers must understand their limitations. A decisionmaker must depend on staff given the volume and complexity of information.

Decision

Policymaker G picked the intermediate decision very early on and remained with that choice.

Other Thoughts

Policymaker G added that there is a game theory aspect to decisionmaking. If decisionmakers believe that OMB is going to criticize whatever option gets sent up, then there is an incentive to choose a more stringent regulation and use that as the basis for negotiation. Policymaker G lamented the adversarial nature of the process, comparing it with running a gauntlet.