



Net Benefits of a Tightened Ozone NAAQS Revealed in EPA's RIA

Summary of a Paper Prepared for American Petroleum Institute

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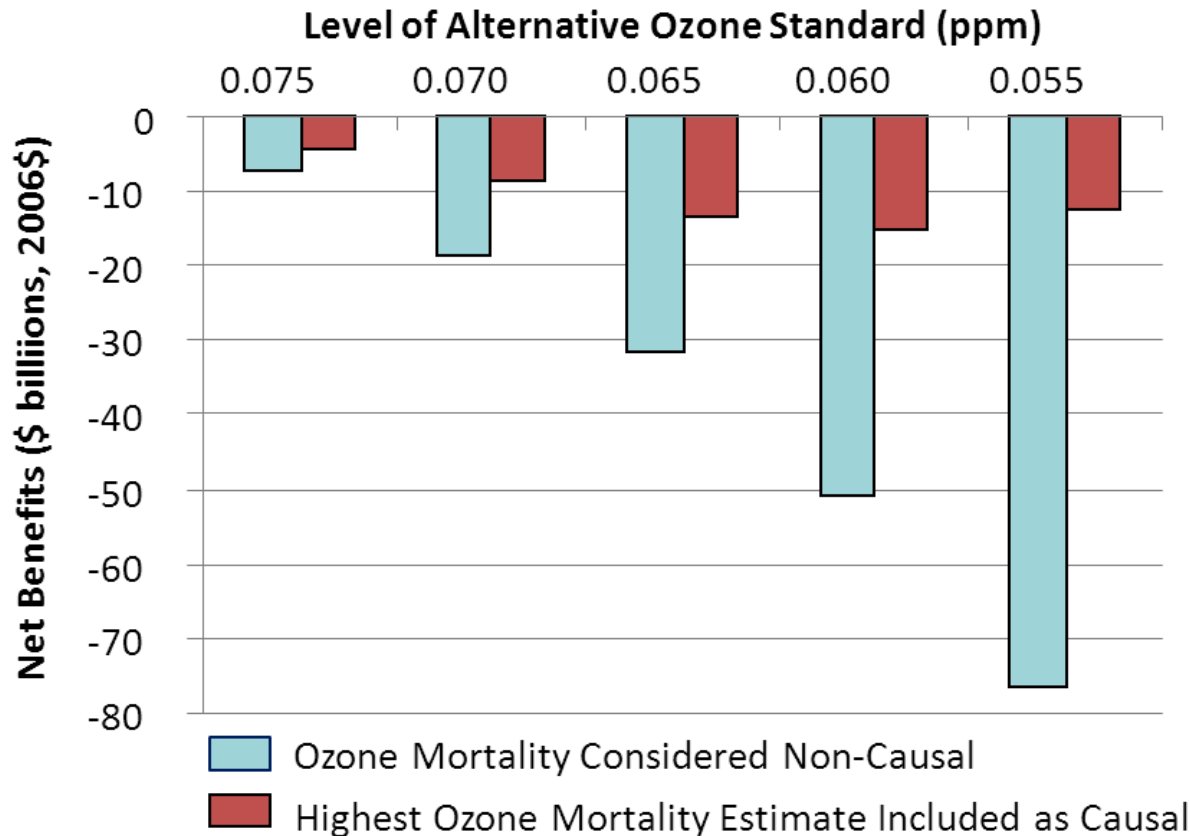
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Key Points



- The “Supplemental RIA” for the Ozone NAAQS reconsideration creates a misleading impression that there is a reasonable benefit-cost case for a tighter ozone standard.
 - The Supplemental RIA actually finds that ozone-related benefits of a tightened Ozone NAAQS would be far less than its costs
 - *i.e.*, all of EPA’s net benefit estimates are negative when considering only the ozone-related benefits.
 - This is true even though the RIA now always assumes (counter to CASAC views) that ozone has a causal association with mortality.
- The RIA obscures EPA’s finding of very small benefits from reducing ozone by adding in “co-benefits” from PM_{2.5} reductions that are dubious and inflated
 - PM_{2.5} controls are mandated by PM’s own health-protecting NAAQS. While PM_{2.5} reductions might occur when reducing ozone, those reductions are not mandated by an Ozone NAAQS
 - The PM_{2.5} co-benefits are dubious:
 - Because they are based on assumed risks from PM_{2.5} far below PM_{2.5} levels that EPA deems safe;
 - Because they are due to changes in a single form of PM_{2.5} for which there is no evidence of potency (*i.e.*, nitrate).
 - EPA has inflated its PM_{2.5} co-benefit assumptions since 2008 without sound technical basis
 - This has also changed the information that was available to the Administrator when making the Ozone NAAQS decision now being reconsidered based on the original record only.
- Even with both ozone mortality benefits and PM_{2.5} mortality co-benefits always included, about half of all of the Supplemental RIA’s net benefits estimates are negative.

Net Benefits in RIA with Only the Ozone-Related Benefits



The net benefits range is negative by billions of dollars per year when PM_{2.5} co-benefits are removed

EPA's New Presumption of a Causal Ozone-Mortality Association Is Unsupported by CASAC



- CASAC has stated that ozone mortality is “not ready for prime time.”
 - In a CASAC conference call in February 2011, members stated their recommendation for a standard at or below 0.070 was not based ozone-mortality.
- In the 2008 RIA, the range of estimated ozone benefits included the no-mortality benefits case, and uncertainty about the causality case was highlighted in the discussion.
- EPA's ozone benefits estimates when ozone mortality is removed:

Alternative Standard	Total Ozone Benefits
0.075 ppm	\$0.07 billion
0.070 ppm	\$0.21 billion
0.065 ppm	\$0.38 billion
0.060 ppm	\$0.74 billion
0.055 ppm	\$1.30 billion.

- These estimates can be derived from the detailed tables of the Supplemental RIA
- They can be compared to costs ranging from \$19b-\$25b for .070 ppm, and \$78b to \$130b for 0.060 ppm.

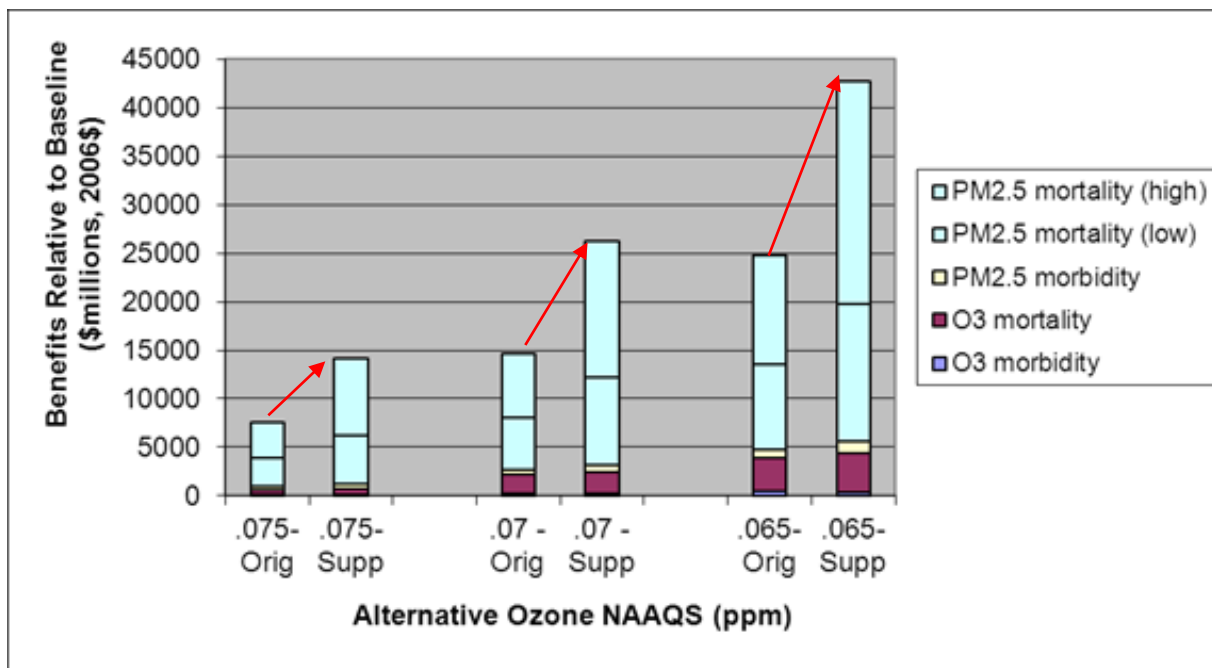
Benefit:Cost Ratios Absent PM_{2.5} Co-Benefits Are Below 1 to 1



Alternative Standard (ppm)	Benefit:Cost Ratio	
	If Ozone Mortality is Non-Causal <i>Col (b) ÷ Col (a) from Table 2 above</i>	Highest Possible (Using highest ozone mortality estimate) <i>Col (d) ÷ Col (a) from Table 2 above</i>
0.075	0.01 to 1	0.41 to 1
0.070	0.01 to 1	0.54 to 1
0.065	0.01 to 1	0.58 to 1
0.060	0.01 to 1	0.71 to 1
0.055	0.02 to 1	0.84 to 1

- Note: All of the ozone benefits estimates fall dramatically if the ozone’s “policy-relevant” background (PRB) assumption is even modestly increased.
 - This assumption that is subject to great uncertainty and further research that suggests EPA used an excessively low value in its ozone benefits calculations.
 - This fact was clearly presented in the original record for the 2008 decision.
 - The above benefit:cost ratios may be much overstated as a result of the PRB assumption.

Predominance of PM_{2.5} Co-Benefits Is Inflated by Several Specious Changes in the Reconsideration's Assumptions



- A 17% increase in ozone and PM_{2.5} mortality benefits occurs via an *ad hoc* decision to increase the VSL above levels used since 2004.
- A 65% increase in the upper bound of PM_{2.5} mortality estimates occurs via decision to count PM_{2.5} risks down to background levels.
(EPA previously treated extrapolation of concentration-response functions below the lowest levels measured in the epidemiological studies as too uncertain to count as benefits.)
- All of the PM_{2.5} co-benefits are for small changes in PM_{2.5} that is already below the PM_{2.5} NAAQS.
- All PM_{2.5} co-benefits are for changes in nitrate particles, for which no evidence of potency exists.

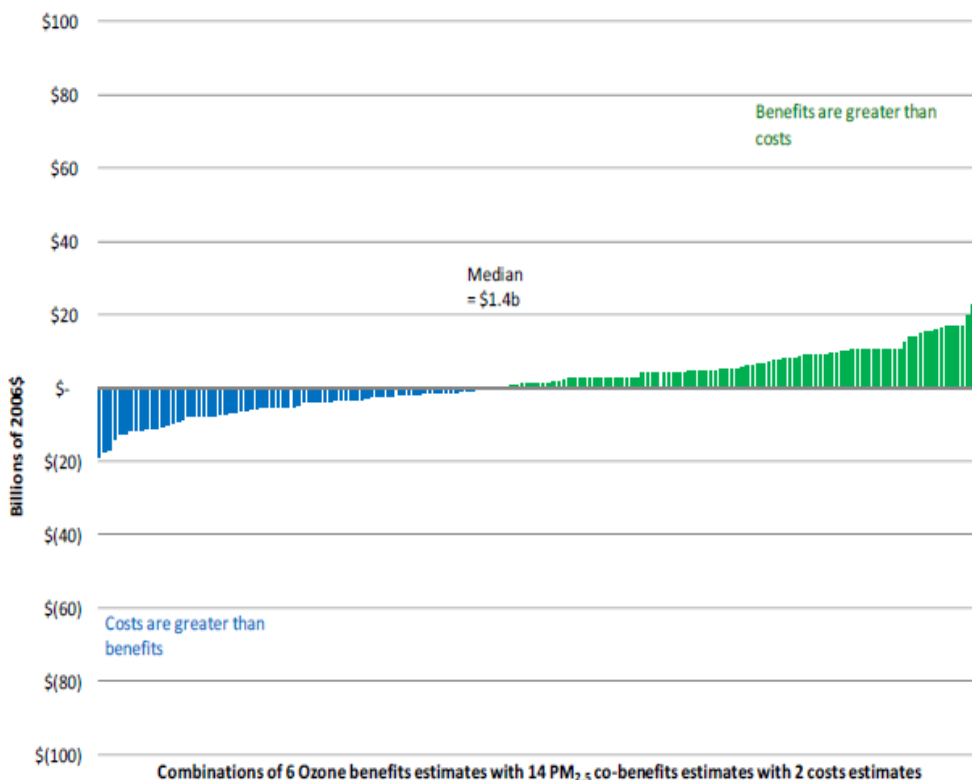
EPA's RIA Misleadingly Reports Potentially Positive Net Benefits for Tightening the Ozone NAAQS



For example, from Supplemental RIA, p. S1-6:

Figure S1.2:

Net Benefits for an Alternate Standard of 0.070 ppm (7% discount rate)



(This chart shows 168 different estimates of net benefits for the 0.070 ppm alternative, ordered from smallest to largest net benefit, without any probability weights. Each bar contains a different combination of EPA's ozone mortality, PM_{2.5} mortality, and cost assumptions. All of the bars include the assumption of ozone-mortality causality.)

- Every blue and green bar in the chart includes PM_{2.5} “co-benefits” from that are significantly larger than the ozone benefits. For the 0.070 ppm alternative shown on the left:
 - PM_{2.5} co-benefits range from about \$3b to \$32b in the various bars (they are greater than \$10b in 93% of the 168 cases)
 - Ozone benefits range from \$2b to \$10b (all presume causality of ozone for mortality)
- Costs range from \$19b to \$25b (for the .070 ppm alternative standard)
- If the PM_{2.5} co-benefits were removed (leaving only ozone-related benefits and costs) every single bar in the figure would be negative -- as was shown on slide #2
 - The same situation exists for all the other alternative ozone standards, including the current 0.075 ppm standard.

92% to 100% of Ozone Benefits Disappear If Policy-Relevant Background Assumption is Varied over its Range of Uncertainty (Sensitivity is same for the ozone morbidity estimates)



Sensitivity of Quantitative Risk Estimates to PRB Assumption at Exact Attainment of 74 ppb Alternative Standard (Average of 2002 and 2004 Air Quality Data)

	# Deaths Using Model-Based PRB Assumption	# Deaths Using 1997's Monitor-based PRB Assumption	Change in Risk Estimate
Atlanta	5.3	0.1	98% ↓
Cleveland	31.7	2.6	92% ↓
Detroit	30.2	0.7	98% ↓
Houston	17.8	0.7	96% ↓
Los Angeles	28.6	0.0	100% ↓
Sacramento	9.5	0.1	99% ↓
St. Louis	3.4	0.2	96% ↓

***EPA's decision to alter its PRB assumption
– NOT new concentration-response information –
is solely responsible for the larger quantitative morbidity and mortality risk estimates as compared to the prior (1997) ozone review***



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