

AGENCY

Environmental Protection Agency (EPA)

*Rule title*

Control of Air Pollution from Motor Vehicles:  
Tier 3 Motor Vehicle Emission and Fuel Standards

RIN	2060-AQ86
Publication Date	March 29, 2013
Comment Period Closing Date	July 1, 2013
Stage	Proposed rule

REGULATORY SCORING

	SCORE
<b>1. Systemic Problem:</b> How well does the analysis identify and demonstrate the existence of a market failure or other systemic problem the regulation is supposed to solve?	2/5
<b>2. Alternatives:</b> How well does the analysis assess the effectiveness of alternative approaches?	2/5
<b>3. Benefits (or Other Outcomes):</b> How well does the analysis identify the benefits or other desired outcomes and demonstrate that the regulation will achieve them?	4/5
<b>4. Costs:</b> How well does the analysis assess costs?	3/5
<b>5. Use of Analysis:</b> Does the proposed rule or the RIA present evidence that the agency used the Regulatory Impact Analysis in any decisions?	3/5
<b>6. Cognizance of Net Benefits:</b> Did the agency maximize net benefits or explain why it chose another alternative?	2/5
<b>Total Score</b>	<b>16/30</b>

SUMMARY

The Environmental Protection Agency (EPA) is proposing new vehicle emissions standards and a reduction in the sulfur content legally permitted in gasoline. According to the EPA, these new standards will improve the environment and public health by lowering the emissions of pollutants, like particulate matter (PM) and ozone.

While the EPA claims these pollutants contribute to increases in human mortality, there's a high degree of uncertainty surrounding its estimates. The regulation's benefits are based in large part upon model selection, not empirical evidence.

The EPA demonstrates some correlation between PM levels and health problems, but no definitive causation. Studies not cited by the EPA call into question the causal link between the total concentration of ambient PM and mortality levels, especially at the low levels that exist today in many parts of the United States.

Because the EPA only calculated net benefits for the proposed alternative, the agency's analysis makes it difficult to know whether or not the EPA has better options available than this rule.

1. Systemic Problem: How well does the analysis identify and demonstrate the existence of a market failure or other systemic problem the regulation is supposed to solve?	2		
Does the analysis identify a market failure or other systemic problem?	3	1A	Though not explicitly defining it as a market failure or systemic problem, the proposed rule does provide a list of pollutants from gasoline-burning vehicles that impose costs external to the producers.
Does the analysis outline a coherent and testable theory that explains why the problem is systemic rather than anecdotal?	2	1B	There is no outline—only evidence that particulates are produced via vehicle emissions that are correlated with negative health effects. The rule fails to present emissions as a negative externality caused by social costs exceeding private costs. In fact, the EPA states the appropriate cost measure for a cost-benefit analysis is defining "social costs" as costs associated with meeting regulations, rather than defining "social costs" as consistent within environmental economics whereby the government is called upon to decrease production to equalize marginal social costs and marginal social benefits.
Does the analysis present credible empirical support for the theory?	2	1C	There is no clear discussion of where the efficient level of negative externalities would be. Perhaps this explains why the EPA does not attempt to present empirical support since it really does not present or develop a theory of negative externalities here. The analysis does provide empirical evidence that particulate emissions are associated with negative health effects. However, there is doubt whether this relationship is causal. Also, questions remain pertaining to whether the correlation is due to the total level of exposure or whether the health effects are due to a particular chemical component of the particulate emissions.
Does the analysis adequately address the baseline? That is, what the state of the world is likely to be in the absence of federal intervention not just now but in the future?	3	1D	The rule uses a baseline that includes many "emission control programs that are expected to reduce ambient pollution levels. As a result of these programs, the number of areas that continue to violate the ozone and PM2.5 NAAQS or have high levels of air toxics is expected to continue to decrease" (p. 33). Thus the baseline is simply the pre-Tier 3 requirements outlined in this proposed rule.
Does the analysis adequately assess uncertainty about the existence or size of the problem?	1	1E	The analysis does acknowledge the uncertainties associated with costs imposed by the emissions, but fails to elaborate on how these uncertainties might ultimately affect their estimation of the size of the problem.
2. Alternatives: How well does the analysis assess alternative approaches?	2		
Does analysis enumerate other alternatives to address the problem?	5	2A	The rule looks at different levels of emission reduction of non-methane organic gases (NMOG), nitrous oxide (NOX), and particulates. These reductions are met by a combination of lower sulfur levels in gasoline that enhance catalytic converter efficiency and additional vehicle emission system control technology. The rule offers "alternatives related to timing and stringency of the proposed standards, as well as program design (e.g., averaging, banking, and trading)." However, these banking and trading policies are in effect for only the first six years of the program.

Is the range of alternatives considered narrow (e.g., some exemptions to a regulation) or broad (e.g., performance-based regulation vs. command and control, market mechanisms, nonbinding guidance, information disclosure, addressing any government failures that caused the original problem)?	2	2B	The level of emissions is set by the EPA. Alternatives discussed to mitigate impacts of proposed rulemaking on small businesses included a delay option for sulfur, provisions for additive manufacturers, alternative refinery gate caps, hardship provisions, delayed standards for small refiners and credit-related flexibilities. These are all fairly minor modifications of the command-and-control proposed regulation. The trading and banking policies are only in effect the first six years of the program. After six years all refiners must meet the standard. Thus the potential benefits of such a credit trading are only obtained during the first six years. For vehicle manufacturers, credits must be used within five years after they are earned, or be forfeited.
Does the analysis evaluate how alternative approaches would affect the amount of benefits or other outcome achieved?	2	2C	The rule summarizes the outcomes associated with lower and higher particulate and NMOG+NOX emission levels and different phase-in rates of each level. However, there is no explicit analysis of the outcomes associated with each alternative regulatory process presented in the RIA. That is, the rule discusses the levels of harms associated with levels of emissions, but it does not discuss how the different regulatory standards might affect the outcome for citizens.
Does the analysis identify and quantify incremental costs of all alternatives considered?	1	2D	There are none present in the RIA or proposed rule; however, the rule does note whether alternatives would impose greater costs or lower benefits.
Does the analysis identify the alternative that maximizes net benefits?	0	2E	Not enough information is provided to determine whether the selected alternative maximizes net benefits.
Does the analysis identify the cost-effectiveness of each alternative considered?	0	2F	See 2E.
<b>3. Benefits (or other Outcomes): How well does the analysis identify the benefits or other desired outcomes and demonstrate that the regulation will achieve them?</b>	<b>4</b>		
Does the analysis clearly identify ultimate outcomes that affect citizens' quality of life?	4	3A	The rule cites reductions in premature mortality, hospital visits, and respiratory ailments.
Does the analysis identify how these outcomes are to be measured?	4	3B	The rule estimates the value of years of life lost due to premature mortality, the costs of additional hospital visits, and the loss of days worked.
Does the analysis provide a coherent and testable theory showing how the regulation will produce the desired outcomes?	3	3C	The analysis provides a coherent and testable theory: lower particulates and ozone emissions will improve health. However, the EPA appears to point to correlations without assessing whether causation is present. Fortunately, tests can be done to demonstrate causation (see Cox, L. A., JR, 2012).
Does the analysis present credible empirical support for the theory?	3	3D	The EPA provides correlation, but not definitive causation. Most importantly, the RIA fails to address whether the concentration of total particulate mass or the composition of those particulates are the root cause of the health effects found in the cited studies.
Does the analysis adequately assess uncertainty about the outcomes?	3	3E	It presents the 5–95 percent range of benefits, but assumes a linear dose response down to the origin, resulting in large benefits estimates. Selecting another model, such as a threshold or hormetic dose response at low doses, would produce vastly lower benefits estimates. Recent academic literature not cited in the RIA has suggested there may be reason to believe particulates exhibit a hormetic dose response at low doses.

Does the analysis identify all parties who would receive benefits and assess the incidence of benefits?	4	3F	The rule thoroughly assesses the total benefits as well as the benefits by age, race, census block, and for those with pre-existing health conditions.
4. Costs: How well does the analysis assess costs of the regulation?	3		
Does the analysis identify all expenditures likely to arise as a result of the regulation?	4	4A	The rule identifies the key expenditures on vehicle emissions systems and refinery capital expenses that will be passed on to consumers through higher vehicle and gasoline prices.
Does the analysis identify how the regulation would likely affect the prices of goods and services?	4	4B	The EPA estimates an increase in vehicle costs; costs differ across years and range from \$71-\$102 for cars, \$93-\$150 for trucks and \$36-\$59 for Class 2b/3 vehicles. The EPA believes the costs are small relative to the cost of vehicles and, in an oligopolistic industry such as the automotive sector, increases in cost may not fully pass through to the purchase price. The EPA does not quantify the expected level of cost pass-through or the ultimate vehicle price increase, apart from noting that prices are expected to increase by an amount up to the increased manufacturers' costs. The EPA estimates manufacturers' costs of gasoline production to rise by about 0.9 cents per gallon, but does not estimate price increase. The EPA believes it may equal the increase in manufacturers' costs of gasoline production.
Does the analysis examine costs that stem from changes in human behavior as consumers and producers respond to the regulation?	3	4C	The rule discusses and includes consumers delaying their purchase of vehicles due to the higher prices. The rule also describes various ways vehicle producers may address the higher emission standard and how these costs are likely to decline over time as producers become more efficient at producing and incorporating these technologies.
If costs are uncertain, does the analysis present a range of estimates and/or perform a sensitivity analysis?	2	4D	Although the EPA provides a great deal of information about costs incurred, almost all are presented as point estimates.
Does the analysis identify all parties who would bear costs and assess the incidence of costs?	3	4E	The rule provides information on the costs associated with various vehicle types (passenger vehicle, light duty vehicle, heavy duty vehicle), engine sizes (4-cylinder, 6-cylinder, etc.), and fuel types (gasoline or diesel).
5. Use of Analysis: Does the proposed rule or the RIA present evidence that the agency used the analysis in any decisions?	3	5	The EPA, though concerned with costs, appears to be just as concerned with harmonization of standards across the United States: "As we [the EPA] considered options for these vehicle standards, one of the important factors we considered was harmonization with the CARB LEV III program. As a result, consideration of alternatives focused less on the level of the per-vehicle standards themselves and more on the phase-in schedule for the standards, which can have an important influence on the cost of the standards" (p. 401 of the proposed rule).
6. Net Benefits: Did the agency maximize net benefits or explain why it chose another alternative?	2	6	The proposed rule does explain why the specific standard was chosen, but does not explicitly choose an option that maximizes net benefit. The agency appears to be just as concerned with industry costs as it is with harmonizing standards with California's Air Resources Board emission standards for NMOG+NOX and particulates.