

AGENCY

Department of Transportation (DOT)

Rule title

Minimum Sound Requirements for Hybrid and Electric Vehicles

RIN	2127-AK93
Publication Date	1/14/2013
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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 National Highway Traffic Safety Administration (NHTSA) has proposed a regulation to protect the blind, visually impaired, and perhaps other pedestrians and pedalcyclists from collisions with hybrid vehicles. The assumed danger is that hybrid vehicles are more likely to hit those who can't see them when noise from a running internal combustion engine is absent, such as when the vehicle is turned on but standing still, backing up, or operating at speeds of 18 mph or less.

The NHTSA's solution is to require hybrid vehicles to produce noise. The NHTSA's Regulatory Impact Analysis (RIA) overstates the benefits and fails to consider the costs and benefits of any alternatives to the rule.

While the purpose of the regulation is to protect the blind and vision-impaired, the RIA assumes without explanation that the regulation will reduce accidents for all pedestrians and pedalcyclists. Oddly, the RIA includes benefits to blind pedalcyclists, even though it is unlikely that any appreciable number of pedalcyclists are blind or vision-impaired.

Correctly calculated, the benefits of this proposed rule may not exceed the costs. The NHTSA should investigate alternative means of protecting blind and vision-impaired individuals from hybrid vehicles. Even if the NHTSA does not develop a more cost-effective alternative, Congress and the public deserve an accurate assessment of the likely benefits and costs of the proposed rule.

<p>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?</p>	<p>2/5</p>	
<p>Does the analysis identify a market failure or other systemic problem?</p>	<p>3/5</p>	<p>The differential in crash rates for hybrid vs. conventional vehicles is assumed to be the problem the regulation is supposed to solve. The NHTSA implies that there is a positive externality for blind pedestrians produced by the sound of internal combustion engines and this sound is lacking on hybrid and electric vehicles at low speeds. As is generally argued in cases of positive externalities, the market under produces the sound, necessitating government intervention.</p>
<p>Does the analysis outline a coherent and testable theory that explains why the problem (associated with the outcome above) is systemic rather than anecdotal?</p>	<p>2/5</p>	<p>Vehicles with internal combustion engines should be observed in fewer blind pedestrian accidents than are hybrid and electric vehicles. RIA presents an engineering theory of the cause of the difference in crash rates—the difference in noise levels. It does not explain why this difference persists or why other mechanisms, such as liability rules or insurance premiums, are insufficient to motivate a solution. It also fails to consider other explanations, such as the possibility that communities where more people buy hybrids are also likely to have more pedestrians and cyclists. Unfortunately, the data confound the relationship since all pedestrians are grouped together and no controls are used for driver characteristics, which could differ across those buying different types of vehicles.</p>
<p>Does the analysis present credible empirical support for the theory?</p>	<p>2/5</p>	<p>No support for any kind of behavioral or market failure theory. There is some research/evidence that collisions with vision-impaired pedestrians are more likely with quieter vehicles. But surely these are a minority of the pedestrians affected by the regulation.</p>
<p>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?</p>	<p>3/5</p>	<p>Electric and hybrid vehicles are assumed to produce little sound at low speeds as compared to that of vehicles with internal combustion engines. The baseline is based on projections of future sales of hybrid and electric vehicles. It assumes manufacturers would put sound in electric vehicles, so benefits and costs stem from putting sound in hybrid vehicles. Hybrid manufacturers are assumed not to install sound in the absence of the regulation.</p>
<p>Does the analysis adequately assess uncertainty about the existence or size of the problem?</p>	<p>2/5</p>	<p>The problem is essentially assumed to exist with certainty. Data limitations are admitted, as are the impacts of these limitations on the conclusions regarding some of the differences in accident rates involving pedestrians and cyclists. However, these limitations don't appear to impact the agency's certainty of the existence or magnitude of the problem. The RIA does acknowledge that other factors might explain some of the differential in crash rates, but it does not develop this to reconsider the existence or size of the problem.</p>
<p>2. Alternatives: How well does the analysis assess alternative approaches?</p>	<p>2/5</p>	
<p>Does the analysis enumerate other alternatives to address the problem?</p>	<p>4/5</p>	<p>The RIA discusses several other alternatives to the command and control policy with the alternatives largely varying in regards to either the appropriate sound bands or in the evaluation and approval of the sound in terms of meeting the potential sound requirements.</p>

<p>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)?</p>	<p>2/5</p>	<p>All of the alternatives are different ways of establishing a sound standard or determining what sounds comply with the regulation. No alternatives to imposing a noise standard were considered.</p>
<p>Does the analysis evaluate how alternative approaches would affect the amount of benefits or other outcome achieved?</p>	<p>1/5</p>	<p>Some of the alternatives were rejected with an explanation of why the NHTSA believes they would not be sufficiently effective. But there was no formal analysis or quantification of the likely benefits of each approach. For only the chosen alternative are the benefits estimated, and much of this estimate is based on assumptions rather than analysis.</p>
<p>Does the analysis identify and quantify incremental costs of all alternatives considered?</p>	<p>1/5</p>	<p>Some alternatives were rejected with an explanation of why the NHTSA felt they would be too costly. While the possible jury testing alternative is said to produce higher costs due to manning the juries, little effort was put forth to estimate the cost differences across the alternatives. For only the chosen alternative are costs estimated.</p>
<p>Does the analysis identify the alternative that maximizes net benefits?</p>	<p>2/5</p>	<p>In presenting the alternatives not chosen, brief explanations are provided as to why they were not selected. However, no analysis is provided to indicate that the agency has maximized net benefits by selecting the chosen alternative. RIA calculates net benefits only for the proposed regulation, not for the alternatives.</p>
<p>Does the analysis identify the cost-effectiveness of each alternative considered?</p>	<p>2/5</p>	<p>Costs and benefits are not estimated for the alternatives not chosen. RIA conducts a breakeven analysis only for the proposed regulation, not for the alternatives.</p>
<p><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></p>	<p><b>4/5</b></p>	
<p>Does the analysis clearly identify ultimate outcomes that affect citizens' quality of life?</p>	<p>5/5</p>	<p>Reduction in injuries from low-speed collisions with pedestrians and cyclists.</p>
<p>Does the analysis identify how these outcomes are to be measured?</p>	<p>5/5</p>	<p>Reduction in injuries is estimated and monetized, and it is also translated into "equivalent lives saved." The analysis employs data from the NHTSA's General Estimates System to estimate injury counts based on expected hybrid vehicle adoption rates. The difference in the pedestrian (and cyclist) injury rates across hybrid vehicles and vehicles with internal combustion engines is presented as the measure of the need for the regulation; the regulation is expected to reduce that difference.</p>
<p>Does the analysis provide a coherent and testable theory showing how the regulation will produce the desired outcomes?</p>	<p>3/5</p>	<p>The theory is that low-speed collisions occur because hybrid vehicles are quieter than conventional vehicles, so pedestrians and cyclists are less likely to hear them. Minimum noise requirements are hypothesized to eliminate the discrepancy between crash rates with hybrid and conventional vehicles. No distinction is made between effects on the vision-impaired vs. effects on people with normal vision.</p>

<p>Does the analysis present credible empirical support for the theory?</p>	<p>2/5</p>	<p>The low speed (35 mph speed zones) accident rate involving pedestrians for hybrid vehicles is statistically greater than that of internal combustion engine (ICE) vehicles, offering some support for the theory. However, the RIA admits that it assumes the entire discrepancy is due to the difference in noise levels, even though the majority of pedestrians and probably all cyclists are not vision-impaired. There may be unobserved (or observed but unmeasured) differences in the drivers of hybrid vehicles relative to those driving ICE vehicles and these differences may contribute to the accident rate differences. The RIA also admits that the difference in low-speed crash rates with cyclists is not statistically significant. Unfortunately, the data currently available confounds the information on this topic because accident data involving vehicles traveling at &lt;18 mph is called for, but the closest to this need is accident data involving vehicles in speed zones of 35 mph. Thus, the benefits are likely significantly overstated.</p>
<p>Does the analysis adequately assess uncertainty about the outcomes?</p>	<p>3/5</p>	<p>RIA admits it makes the two significant assumptions listed above but does not explicitly explore how alternative assumptions would affect the results. It does include a breakeven analysis that estimates the benefits of the regulation justify its costs if it produces a 13–15 percent reduction in the crash rate differential between hybrid and conventional vehicles. It also includes sensitivity analyses showing effects of different assumed rates of hybrid sales and values of a statistical life.</p>
<p>Does the analysis identify all parties who would receive benefits and assess the incidence of benefits?</p>	<p>3/5</p>	<p>Beneficiaries are the pedestrians and cyclists who avoid injuries as a result of the regulation. RIA does not consider that the benefits may be different for people whose vision is impaired vs. people with normal vision. This may lead to overstatement of benefits and obscure the fact that the primary beneficiaries are probably the vision impaired. It is also possible that other drivers could benefit, particularly during more temperate times of year when windows are often down, but this is not mentioned or measured.</p>
<p>4. Costs: How well does the analysis assess costs of the regulation?</p>	<p>3/5</p>	
<p>Does the analysis identify all expenditures likely to arise as a result of the regulation?</p>	<p>4/5</p>	<p>Material and installation costs are estimated to be relatively small per vehicle, at \$30 per low-speed and light vehicle. Costs for medium/heavy trucks, buses, and motorcycles are not included due to a lack of reliable estimates of the target population. Additional fuel costs due to the added weight and testing costs are also addressed. It also acknowledges that increased noise generates unquantified social costs. RIA assumes manufacturers will meet the standard by using a sound chip and a speaker, and cost estimates are based on this technology. The NHTSA notes that this is a performance standard, so manufacturers could use other technologies to meet the standard if they prefer.</p>
<p>Does the analysis identify how the regulation would likely affect the prices of goods and services?</p>	<p>2/5</p>	<p>Analysis calculates cost per vehicle of approximately \$34–35, but does not explicitly estimate how much of this would be passed on to consumers. Additionally, the rule would likely increase the demand for the speakers used for this purpose, possibly increasing the price by a significant percentage (but likely by a small magnitude).</p>

<p>Does the analysis examine costs that stem from changes in human behavior as consumers and producers respond to the regulation?</p>	<p>2/5</p>	<p>The analysis does acknowledge that should people purchase hybrid vehicles meeting the standards of this regulation, there may be increased noise, which could disturb some individuals; however, this cost is not measured. The costs are assumed to “be minimal and will decline further once they understand the value to pedestrians.” While the cost may be small, assuming it will decline because of the external benefit to pedestrians is likely flawed.</p>
<p>If costs are uncertain, does the analysis present a range of estimates and/or perform a sensitivity analysis?</p>	<p>3/5</p>	<p>Where costs are less certain, the agency fails to quantify the costs (medium/heavy trucks, buses, and motorcycles). Sensitivity analysis is conducted for computed costs, varying the hybrid sales rates.</p>
<p>Does the analysis identify all parties who would bear costs and assess the incidence of costs?</p>	<p>2/5</p>	<p>The analysis does a fair job of naming parties bearing costs, including bystanders and drivers disturbed by the additional noise. Cost per vehicle is estimated, but there is no discussion of whether consumers or manufacturers will bear this cost.</p>
<p>5. Use of Analysis: Does the proposed rule or the RIA present evidence that the agency used the analysis in any decisions?</p>	<p>3/5</p>	<p>The NHTSA appears to have conducted and used extensive research to identify what sound is comparable to conventional vehicles. This research may have affected decisions to reject some of the alternatives, which were relatively small modifications of the basic approach.</p>
<p>6. Cognizance of Net Benefits: Did the agency maximize net benefits or explain why it chose another alternative?</p>	<p>2/5</p>	<p>Net benefits were calculated only for the proposed regulation; thus, they did not affect the NHTSA’s choice among alternatives. The NHTSA appears to have decided (based on the law) to adopt a minimum noise standard, and then afterward calculated the benefits and costs to comply with EO 12866.</p>