



November 15, 2004

Dr. Jeffrey Runge, Administrator  
National Highway Traffic Safety Administration  
U.S. Department of Transportation  
400 7<sup>th</sup> Street, S.W.  
Washington, D.C. 20590

**Comments on Tire Pressure Monitoring Systems; Controls and Displays; Notice of Proposed Rulemaking, 69 FR 55896 *et seq.*, September 16, 2004**

Dear Administrator Runge:

Public Citizen is pleased to have the opportunity to comment on the National Highway Traffic Safety Administration's (NHTSA) new notice of proposed rulemaking for tire pressure monitoring systems (TPMS).

Tire underinflation is a serious hazard for consumers. When a tire is under inflated, its sidewalls flex more than they should and the air temperature inside the tire increases, making it more prone to failure. Such failures are particularly serious for SUVs and pickups because light trucks are so prone to rolling over. In addition, under inflation reduces the tread life of tires and the fuel economy of vehicles, both of which are costly for consumers. The facts unearthed by the agency in preparing for the 2001 NPRM are alarming and suggest there is a dire need for a rule that will heighten consumer awareness of tire hazards, as Congress intended:

- Seventy-four percent of the on-road fleet has at least one tire that is under inflated.<sup>1</sup>
- Thirty-six percent of passenger cars and 40 percent of light truck vehicles (minivans, pick-up trucks and sport utility vehicles) have at least one tire that is 20 percent or more below the recommended tire pressure.<sup>2</sup>
- While 85 percent of the population of drivers is concerned about maintaining proper tire inflation in their vehicles, only 25 percent use the correct method to determine the manufacturer's recommended tire pressure, and 43 percent fail to actively maintain their tire pressure.<sup>3</sup>

- Worn tire tread may reflect continuous driving on under inflated tires; nine percent of vehicles sampled had at least one tire that was bald, that is, with tread wear at or below two 32<sup>nds</sup> of an inch.<sup>4</sup>
- Radial tires, which are standard equipment on most new cars, can lose much of their air pressure and still appear to be fully inflated,<sup>5</sup> yet between 6 and 16 percent of drivers admitted to checking their tire inflation levels visually.<sup>6</sup>
- While more than 90 percent of gas stations have air pumps, nearly 10 percent are out of order; 50 percent lack gauges to measure air pumped into the tire; and 20 percent of those that do have pumps give inaccurate readings, reflecting an inflation level that is as much as 4 psi more than the air pressure actually in the tire.<sup>7</sup>

### *Action on Tire Pressure Monitoring Rule Is Long Overdue*

The agency's proposed tire pressure monitoring rule is long overdue. After a lawsuit brought by Public Citizen, the United States Court of Appeals for the Second Circuit issued an order overturning the agency's rule as contrary to directions from Congress to protect consumers by indicating when any tire on the vehicle was significantly under-inflated.

The Court's decision in August 2003 directed the agency to develop a new rule, and the agency could have written a new final rule in a timely fashion. However, NHTSA dragged its feet, doing nothing over the entire past year and forcing Public Citizen to return to Court in July 2004 to ask the Court to order the agency to act. Rather than issuing a new final rule as it originally said was its intention and as it should have, the agency issued a proposal and opened yet another delay-inducing docket on the rule.

If the agency had issued an appropriately strong final rule from the beginning, direct systems that truly provide prompt warning of dangerous underinflation would be available to all consumers now, and the continuous monitoring of all four tires on the dashboard might have triggered a cultural sea-change in attention to tire safety.<sup>8</sup> In addition, manufacturers of these systems would further invest to perfect future direct systems. Consumers who regularly monitored their tire conditions would see cost savings in gas from improved fuel economy, cost savings on the longer tread life of their tires, and, most importantly, fewer tire-related crashes.

We urge the agency to issue a new and legal final rule promptly and without further delay. According to agency calculations, 149 needlessly die each year that this rule remains in limbo, meaning that the delay incurs, according to a term coined by OMB Administrator John Graham, the "statistical murder" of these 149 people.

### *Many Elements of Proposal Are Reasonable*

NHTSA's proposal largely reflects the Court's determination that its previous rule was inadequate, leaving too many drivers and passengers unaware of dangerously under-inflated tires. Some of the elements of the proposed rulemaking are non-controversial: Public Citizen supports most of NHTSA's proposal concerning the telltale color, ignition interface, and bulb check. Moreover, we also support the agency's proposal to use a performance check of TPMS operation on the Southern Loop Treadwear Course. The agency took a similar approach when adopting the ABS requirement for combined vehicle tractors. Finally, we reluctantly support the compliance dates and associate actions. While some phase-in time is required for the automakers and suppliers, the agency has been recklessly slow in proposing this regulation given its potential to save about 150 people a year.

### *Separate Underinflation and Malfunction Telltales Needed to Prevent Confusion*

Public Citizen believes strongly that the agency should require separate warning indicators for underinflation and for TPMS operating malfunction. We believe a telltale that operates as a combined underinflation and malfunction indicator could confuse some motorists and slow down reaction time in potentially dangerous crash avoidance situations. A combined indicator could particularly be a problem for older drivers, who tend to have poorer vision capabilities and slower reaction times.

### *Flashing Warnings Imply More Urgency than Continuously Illuminated Warnings*

We believe that NHTSA should require that the warning indicators for underinflation and for TPMS operating malfunctions flash when indicating a problem.

In the case of separate malfunction and underinflation indicators, the agency proposes that the indicators would light up when a malfunction/tire underinflation is sensed and remain illuminated continuously, whenever the ignition locking system is in the 'Run' configuration, while the problem persists. Moreover, the agency states in the section responding to petitions regarding reconfigurable displays that "we want to emphasize that under this proposal, the TPMS telltale would not be permitted to flash or cycle when performing its underinflation detection function."<sup>9</sup>

We believe, however, that a flashing malfunction indicator would be more likely to be associated with danger by the driver than a continuously illuminated indicator, which drivers may associate with a less urgent condition. The agency offers no explanation or supporting research, either in this NPRM or in earlier associated notices, for its statement in the reconfigurable displays section of the NPRM essentially giving notice that the agency will not consider telltales that "flash or cycle."

Moreover, we do not agree the agency's proposal in the case of a combined TPMS malfunction/underinflation telltale: that the indicator flash only for the first minute

before becoming continuously illuminated. *The indicator should flash continuously so long as the respective problem is detected and the ignition locking system is in the 'Run' configuration.*

We believe that this flashing warning indicator would increase the likelihood of provoking driver response to address an underinflation problem, and it is unlikely this warning would become a “nuisance” and be ignored by the driver. The agency provides no research to back up such a claim against a flashing indicator — just as it failed to do with its “nuisance” argument used against proposing a 20-percent underinflation warning threshold (see below).

#### *Flashing Warning Indicators Can Provide Improved Information to the Driver*

Flashing indicators, moreover, could provide improved information to the driver in the case of the underinflation indicator — not completely unlike the suggested allowable addition of a red underinflation indicator light that could illuminate when a tire reaches a level of underinflation that a manufacturer considers particularly dangerous. For example, an underinflation indicator could flash increasingly fast as a tire continues to lose air after having reached the threshold for the illumination of the indicator.<sup>10</sup>

#### *TPMSs Should Detect and Indicate Underinflation Promptly Regardless of Driving Conditions*

TPMSs should be able to detect tire underinflation and indicate the problem on the underinflation telltale within one minute so as to provide the driver with sufficient warning before vehicle crash avoidance capabilities are compromised. We are not alone in our concerns. The Rubber Manufacturers Association (RMA), a trade organization whose members include all the major national tire manufacturers, also supports an underinflation telltale that quickly illuminates after underinflation occurs in one or more tires:

[A]t the time of the warning, and while driving at highway speeds, handling and stability should not be so diminished by lack of tire inflation pressure, that the driver may not be able to safely maneuver the vehicle without running the risk of causing an accident, such as rim-tripped rollover.<sup>11</sup>

Public Citizen objects to what appears to be the unjustifiable lowering of the safety bar in order to accommodate more manufacturers. This is something that was specifically rejected by the Court in *Public Citizen v. Mineta*. Direct TPMSs could easily meet a one minute underinflation detection requirement, but indirect systems could have difficulty meeting such a requirement. Although NHTSA makes no mention of this performance difference in this recent NPRM, in its earlier NPRM the agency stated that it had “received data from TPMS manufacturers indicating that direct TPMSs can alert the

driver in less than one minute after a tire becomes significantly under-inflated, while indirect TPMSs can take up to ten minutes to do so.”<sup>12</sup>

Moreover, we strongly object to the specifications suggested by the agency in its proposed paragraph “System detection phase,” in which the TPMS telltale would not have to illuminate until the vehicle has traveled in one direction for ten minutes cumulatively, including the possibility of the vehicle traveling up to seven minutes cumulatively in one direction and then traveling backwards up to three minutes in the opposite direction. This paragraph would lower safety because so many suburban/urban trips involve frequent changes in direction. A family could drive for a half hour in their neighborhood and not even have the TPMS functional. This is intolerable. Direct TPMSs can detect underinflation as soon as the key is turned, no driving even required.

We are also very concerned by the agency’s proposal that TPMSs not be required to function at speeds that are typical of highway vehicles. The highway speed limits in most states are 65 to 75 mph, and tires are more likely to fail at high speeds because of added stress and heat. The agency also states in its earlier final rule that “[u]nder-inflation, along with high speed and overloading, can cause tire blowouts.”<sup>13</sup> Moreover, NHTSA specifically cites high speed driving as a contributing factor to the risk of tire failure in its tire safety brochure, “Tire Safety: Everyone Rides on It.”<sup>14</sup>

Despite this, the agency is proposing to require TPMS operation only between 31.1 mph to 62.2 mph.<sup>15</sup> This is completely contrary to the purpose of the TREAD Act and NHTSA’s mission as a highway safety agency. While indirect TPMSs have difficulty accurately detecting underinflation at high speeds, direct TPMSs do not present such a problem. We concur with RMA’s comment that “the TPMS [proposed standard] does not include test conditions that represent the real world, and in particular those real world conditions where a tire may fail due to under-inflation.”<sup>16</sup> The agency should require a TPMS that can promptly detect and indicate to the driver tire underinflation, regardless of the driving conditions.

The agency claims it has designed a “technology-neutral” standard, yet elements of the standard, like the contorted “system detection phase” condition and limited speeds at which a TPMS would be required to operate, are blatantly crafted for the singular purpose of accommodating a less effective safety technology — indirect TPMSs — when direct TPMS technology can immediately detect tire inflation levels without any special driving conditions. The Court was clear in *Public Citizen v. Mineta* that the agency cannot lower safety requirements simply to accommodate inferior technology when effective and affordable technology already exists.

#### *TPMSs Should Operate on All OEM Replacement and Full-sized Spare Tires*

NHTSA answered several petitions from the auto industry, granting its pleas to let manufacturers off the hook if their tire pressure monitoring systems do not work with replacement or spare tires. This decision by NHTSA is absurd, because vehicles always

require several sets of tires throughout their lifetime.<sup>17</sup> It is feasible for manufacturers to recommend replacement tires that would work, and for the technology to be flexible enough to accommodate new tires. Moreover, in the case of when a manufacturer supplies a vehicle with an OEM full-sized spare tire, there is no visible incentive for a driver to swap the spare for a new tire after having put on the spare in the case of a flat tire. The full-sized spare will feel like the original tire to the driver. NHTSA should require that all replacement tires and OEM full-sized spare tires to be operational with the TPMS.

*The Adoption of a TPMS Underinflation Warning Threshold of 25-percent Compromises Safety for the Sake of Accommodating Indirect TPMSs*

The agency should set a TPMS standard of four-tire, 20-percent underinflation detection, not four-tire, 25-percent detection, because the more stringent standard would significantly improve safety while maintaining reasonable cost-effectiveness. The agency misuses the *Public Citizen v. Mineta* decision. The decision did not preclude the agency from presenting its own thorough justification for the proposed 25-percent standard instead of the 20-percent standard.<sup>18</sup>

Moreover, it is clear that the agency has lowered the safety bar in this rulemaking to accommodate indirect and hybrid TPMSs. The 25-percent detection threshold was proposed specifically for this purpose, as the agency itself said in the later-vacated 2002 final rule:

The agency created the other option by adjusting the definition of “significantly under-inflated” for the four-tire option to 25 percent (instead of 20 percent) so that improved indirect TPMSs and hybrid TPMSs could be used to comply with the TPMS standard.<sup>19</sup>

Yet, as already mentioned above and as Representative Markey (D-Mass.) forcefully pointed out in the hearing before the House of Representatives Subcommittee on Commerce, Trade, and Consumer Protection on February 28<sup>th</sup>, 2002, an indirect TPMS is significantly less effective than a direct TPMS:

- Indirect systems are only available on vehicles with antilock brakes, which are the more expensive vehicles on the highway.
- Because it measures differences in rotational speed of tires rather than directly measuring inflation levels, it works only if one tire is more than 25 percent less inflated than the others; the direct system, by contrast, provides continuous readouts on the dashboard *in addition to warnings at underinflation levels of 20 percent*, so that conscientious consumers can adjust tire inflation levels to keep them right at the recommended level, thereby preventing the repeated, cumulative damage to tires.
- Indirect systems do not work if all four tires are equally under inflated, not an unlikely scenario if they are checked or purchased at the same time.

- It also does not work if two tires on the same axle *or* the same side of vehicle are equally under inflated, but does work if diagonal tires are equally under inflated, a shell game that is certain to confuse and frustrate consumers. By comparison, the direct system monitors inflation changes in all four tires and any tire combination.
- The vehicle must be moving for the system to work, so it cannot be used to check proper inflation at a gasoline station while consumers are inflating the tire and will only alert consumers once they are already on the road.
- Indirect systems have difficulty accurately detecting tire pressure when a vehicle travels at higher speeds, such as 65 or 70 mph, which are typical speeds for vehicles on the highway.
- The indirect systems were, overall, less reliable in notifying consumers of serious underinflation levels.

*The Agency’s “Nuisance” Argument Against a 20-percent Threshold Is Completely Unsubstantiated*

The agency’s assertion that “setting a lower threshold [for underinflation warnings] could result in a higher rate of non-response by drivers who regard the more frequent notification as a nuisance” is purely speculative. The agency provides no data to support the claim that a 20-percent standard, as opposed to a 25-percent standard, would increase the risk of the TPMS warnings becoming a “nuisance” to the driver and being disregarded.

The agency cited the “nuisance” argument in its 2001 NPRM and the vacated 2002 final rule, also without any supporting research. In these notices, however, the agency was only concerned with thresholds for underinflation warnings that were more stringent than 20-percent — such as a 10-percent standard.<sup>20</sup> In this new NPRM, despite no new research, the agency now somehow claims that it can draw a bright line between the 20-percent and 25-percent thresholds based on the alleged “nuisance” risk. NHTSA, however, even states earlier in the notice and in clear contradiction with this assertion:

There does not appear to be specific threshold level at which benefits are maximized by a combination of minimum reduction in placard pressure and maximum response by drivers.<sup>21</sup>

Public Citizen requests that NHTSA provide substantive driver behavior research to support this uncorroborated contention. In its absence, NHTSA should abandon this flimsy argument and set a 20-percent TPMS standard.

*NHTSA Rulemaking Submissions Actually Provide Substantial Support for a 20-percent Standard*

The agency claims in this notice that “degradation in vehicle braking and handling performance does not become a significant safety issue at small pressure losses.” Yet the record reflects no real-world testing by the agency. The agency must perform actual

vehicle testing or its claim that 20-percent tire underinflation has no significant impact on vehicle handling is purely speculative.

Despite NHTSA's claim that "small pressure loss" is not important, the agency frequently cites tire underinflation as a significant risk factor for rollover crashes.<sup>22</sup> Moreover, in its 2001 NPRM the agency clearly favored the 20-percent option and cited its many advantages compared to a 25-percent option. NHTSA cited data provided by Goodyear showing that if vehicles had proper tire inflation compared to 20 percent underinflation, average stopping distance across all speeds and conditions would decline, reducing the number of crashes involving braking vehicles and reducing the impact speed of those braking-related crashes that occur.<sup>23</sup>

NHTSA estimated in the 2001 NPRM that preventing 20-percent or greater underinflation of vehicle tires would annually save 79 lives and prevent or reduce in severity 10,635 nonfatal injuries. A tire warning system that did not alert the driver until 25-percent underinflation, by contrast, would save an estimated 49 lives and prevent and reduce in severity only 6,585 nonfatal injuries.<sup>24</sup> The 20-percent standard would reduce fatalities and injuries by about 40 percent more than a 25-percent standard. That is clearly a significant safety discrepancy. In addition, the Goodyear data indicated that a 20-percent instead of 25-percent standard would provide greater savings due to increase vehicle fuel efficiency and greater tire longevity.<sup>25</sup>

Moreover, a 136-page technical report by NHTSA drafted by three agency experts and ten other advisors, who conducted extensive testing of both systems, corroborated the agency's preference in 2001 for direct measuring systems:

Through its testing, NHTSA found that systems that use sensors to directly measure tire pressure (pressure-sensor based systems) were better able to detect underinflation, had more consistent warning thresholds, and were quicker to provide underinflation warnings than the systems that infer tire pressure from monitoring wheel speeds (wheel-speed based [or "indirect"] systems).<sup>26</sup>

In the new 2004 notice, the agency offers further support for the 20-percent standard when it cites its March 2002 Final Economic Assessment of tire pressure monitoring options, noting:

We note that a 20 percent 4-tire option was examined in the March 2002 analysis, and that the total benefit for the 20 percent threshold was about 15 percent higher than from the 25 percent threshold.<sup>27</sup>

NHTSA then attempts to disqualify its own assessment results because the assessment "assumed the same level of driver response for both thresholds" and because a more stringent standard may "limit technology and discourage innovation."<sup>28</sup> Both assertions are flawed.



First, as noted above, the agency has never provided any research demonstrating different driver response rates for different underinflation warning thresholds. Furthermore, the agency states earlier in the notice that “[t]here does not appear to be a specific threshold at which benefits are maximized by a combination of minimum reduction in placard pressure and maximum response by drivers.”<sup>29</sup>

Second, NHTSA provides no data suggesting that setting a more stringent underinflation threshold would “limit technology and discourage innovation.” This unsubstantiated, half-baked argumentation mimics the case made by the agency in *Public Citizen v. Mineta* for adopting a safety standard that gives automakers the option to install indirect TPMSs. That reasoning was specifically rejected by the Court:

[T]he agency’s innovation argument focuses exclusively on the future of indirect and hybrid systems, but neglects the future of direct systems. While the agency predicts that hybrid systems could be developed and that the performance of indirect systems could be enhanced, it ignores the possibility that the costs of direct systems could be reduced.<sup>30</sup>

There is good evidence, in fact, that the costs of direct TPMSs are declining. In its 2002 final rule, NHTSA noted that direct TPMS maintenance costs could be significantly reduced “if manufacturers could mass produce a direct TPMS that did not require the pressure sensors to be replaced when the batteries are depleted.”<sup>31</sup> A number of manufacturers, including IQ-mobil Electronics of Germany and ETV Corporation Pty. Limited of Britain<sup>32</sup>, offer battery-less direct TPMSs, suggesting that the capacity for the mass production of such systems already exists.

#### *When Safety and Cost Are Weighed, the Agency Must Give Extra Weight to Safety*

When cost and safety are in balance, NHTSA is obligated by law to give extra weight to safety, and it is contrary to the agency’s mandate that it lower the threshold of acceptable risk simply in order to accommodate an inferior safety technology that may be slightly less costly. Allowing a 25-percent underinflation warning threshold permits more manufacturers to be accommodated at the direct expense of motorist safety, and the Court in *Public Citizen v. Mineta* specifically chastised the agency for such neglect of its responsibility under the law: “[T]he lower price of such a [less effective TPMS] system, alone, would not justify adoption of an even less rigorous TPMS standard.”<sup>33</sup>

While NHTSA was instructed in the case of *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.* to consider costs in addition to benefits of a rulemaking, the Court made it clear that “Congress intended safety to be the pre-eminent factor under the [National Traffic and Motor Vehicle Safety] Act.”<sup>34</sup> Citing this case, the Court in *Public Citizen v. Mineta* rejected the agency’s largely inconsistent and *a priori* rationale for lowering TPMS safety requirements to permit the use of indirect TPMSs for compliance with the standard:

State Farm instructs the agency to place a thumb on the safety side of the scale. Yet we have searched the rulemaking record here in vain for some “rational connection between the facts found and the choice made.”<sup>35</sup>

Unfortunately, again in this new proposed TPMS rulemaking, we see a similar failure of the agency to logically draw upon the facts in the record — that direct TPMSs offer clearly superior safety benefits compared to indirect TPMSs, and at a reasonable cost — and consequently propose a feasible standard that would save the most lives.

### *Conclusion*

Public Citizen has always seen a tire pressure monitoring standard as a significant opportunity for the agency to improve safety, as well as raise vehicle fuel efficiency and extend tire longevity. We are very concerned, however, by the agency’s continued effort to craft a rule that lowers the safety bar in order to accommodate the manufacturers of inferior indirect TPMSs — at the direct expense of the safety of the motoring public. We ask that the agency reconsider many elements of the proposed standard discussed in these comments to the docket and issue a final rule that truly maximizes its safety benefits.

- **Telltale for Warning Tire Underinflation and TPMS Malfunction Should Be Separate:** A combined underinflation and malfunction indicator could confuse some motorists and slow down reaction time in potentially dangerous crash avoidance situations.
- **TPMS Warning Indicators for Underinflation and Malfunction Should Flash When Indicating a Problem:** A flashing malfunction indicator would be more likely to be associated with danger by the driver than a continuously illuminated indicator. Moreover, a flashing indicator can provide improved information, such as by flashing faster as underinflation becomes more critical.
- **TPMS Should Detect and Indicate Underinflation Promptly Regardless of Driving Conditions:** TPMS should be able to detect tire underinflation and indicate the problem on the underinflation telltale within one minute so as to provide the driver with sufficient warning before vehicle crash avoidance capabilities are compromised. Moreover, TPMS should be required to function regardless of vehicle speed or special driving conditions.
- **TPMS Should Operate on All OEM Replacement and Full-sized Spare Tires:** Vehicles require several sets of replacement tires throughout their lifetime. In addition, lacking any particular disincentive, drivers may drive for long periods on a full-sized spare tire after making use of it.
- **The TPMS Underinflation Threshold Should Be Set at 20-percent Underinflation:** Data presented by NHTSA has shown that a 20-percent standard

would reduce fatalities and injuries by about 40 percent more than would a 25-percent standard. Moreover, the standard would provide greater gains in tire longevity and fuel efficiency. A 20-percent TPMS standard is easily achieved by affordable direct TPMS technology.

Thank you for your consideration of our comments.

Sincerely,

Joan Claybrook  
President, Public Citizen

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## **END NOTES**

<sup>1</sup> National Center for Statistics and Analysis, Tire Pressure Special Study, August 2001, DOT HS 809 315 (Methodology); DOT HS 316 (Interview Data); DOT HS 317 (Vehicle Observation Data). As part of this four-part study, NHTSA also conducted extensive surveys at 336 gasoline stations throughout the U.S., *see* Kristin Thiriez (NHTSA Engineer) and Rakesh Subramanian (NHTSA Mathematical Analyst), Tire Pressure Special Study, October 2001, DOT HS 809 359 (Using sample of 10,900 observations of tire pressure of all four tires on vehicle); *see also* Frank Swoboda, “Inaccurate Tire Gauges Can Be a Matter of Safety,” *The Washington Post*, Dec. 4, 2001.

<sup>2</sup> Tire Pressure Monitoring Systems: Controls and Displays, Notice of Proposed Rulemaking, 66 FR 38982, July 26, 2001.

<sup>3</sup> Kristin Thiriez (NHTSA Engineer) and Rakesh Subramanian (NHTSA Mathematical Analyst), Tire Pressure Special Study, October 2001, DOT HS 809 359.

<sup>4</sup> National Center for Statistics and Analysis, Tire Pressure Special Study, August 2001, DOT HS 317 (Vehicle Observation Data).

<sup>5</sup> Frank Swoboda, “Inaccurate Tire Gauges Can Be a Matter of Safety,” *The Washington Post*, Dec. 4, 2001.

<sup>6</sup> Preliminary Analysis of Findings, 2001 NASS Tire Pressure Special Study, Aug. 3, 2001, Docket No. NHTSA-2000-8572-74.

<sup>7</sup> Preliminary Analysis of Findings, 2001 NASS Tire Pressure Special Study, Aug. 3, 2001, Docket No. NHTSA-2000-8572-74.

<sup>8</sup> Statistical evidence collected by the agency suggests that this is quite possible, as 85 percent of drivers of the 11,530 vehicles surveyed were “concerned about maintaining proper tire inflation.” *See* Preliminary Analysis of Findings, 2001 NASS Tire Pressure Special Study, Aug. 3, 2001, Docket No. NHTSA-2000-8572-74.

<sup>9</sup> Tire Pressure Monitoring Systems: Controls and Displays, Final Rule, 69 FR 55896, September 16, 2004, at 69 FR 55908.

<sup>10</sup> Comments of ETV Corporation Pty Limited, Nov. 4, 2004, Docket No. NHTSA-2004-19054-26.

<sup>11</sup> Documents submitted to the National Highway Traffic Safety Administration by the Rubber Manufacturers Association at an *ex parte* meeting, Aug. 20, 2004, Docket NHTSA-2000-8572-324

<sup>12</sup> Tire Pressure Monitoring Systems: Controls and Displays, Notice of Proposed Rulemaking, 66 FR 38982, July 26, 2001, at 38993

<sup>13</sup> Tire Pressure Monitoring Systems: Controls and Displays, Final Rule [later vacated], 67 FR 38704, June 5, 2002, at 38739.

<sup>14</sup> “Tire Safety: Everyone Rides on It,” Brochure, National Highway Traffic Safety Administration, <http://www.nhtsa.dot.gov/cars/rules/TireSafety/ridesonit/brochure.html>

<sup>15</sup> Tire Pressure Monitoring Systems: Controls and Displays, Final Rule, 69 FR 55896, September 16, 2004, at 55925.

<sup>16</sup> Comments of the Rubber Manufacturers Association, Nov. 10, 2004, Docket No. NHTSA-2004-19054-10.

<sup>17</sup> According to NHTSA, in 2003 the average tire lifespan was 46,300 miles / 3.8 years. Meanwhile, new passenger cars and light trucks are expected to have median service life of 16 years. That would mean an average of 3-4 tire changes in a vehicle’s lifetime. For tire lifetime information, *see*: MacIsaac, James D., National Highway Traffic Safety Administration, “Interim Update – NHTSA Tire Aging Test Development Project,” SAE Government/Industry Conference, Washington, D.C., May 12, 2004; for vehicle lifetime information, *see*: “Draft Technology and Cost Assessment for Proposed Regulations to Reduce Vehicle Climate change Emissions Pursuit to AB 1493,” Air Resources Board, California Environmental Protection Agency.

<sup>18</sup> Tire Pressure Monitoring Systems: Controls and Displays, Final Rule, 69 FR 55896, September 16, 2004, at 55897.

<sup>19</sup> Tire Pressure Monitoring Systems: Controls and Displays, Final Rule [later vacated], 67 FR 38704, June 5, 2002, at 38718.

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- <sup>20</sup> Tire Pressure Monitoring Systems: Controls and Displays, Notice of Proposed Rulemaking, 66 FR 38982, July 26, 2001, at 38990.
- <sup>21</sup> Tire Pressure Monitoring Systems: Controls and Displays, Final Rule, 69 FR 55896, September 16, 2004, at 55918.
- <sup>22</sup> Examples: <http://www.nhtsa.dot.gov/cars/problems/Rollover/pages/MiniTPandVL.htm> and <http://www.nhtsa.dot.gov/cars/problems/Rollover/pages/MiniTPandVL.htm>
- <sup>23</sup> Tire Pressure Monitoring Systems: Controls and Displays, Notice of Proposed Rulemaking, 66 FR 38982, July 26, 2001, at 38996.
- <sup>24</sup> Tire Pressure Monitoring Systems: Controls and Displays, Notice of Proposed Rulemaking, 66 FR 38982, July 26, 2001, at 38996.
- <sup>25</sup> Tire Pressure Monitoring Systems: Controls and Displays, Notice of Proposed Rulemaking, 66 FR 38982, July 26, 2001, at 38996.
- <sup>26</sup> An Evaluation of Existing Tire Pressure Monitoring Systems, DOT HS 809 297, July 2001.
- <sup>27</sup> Tire Pressure Monitoring Systems: Controls and Displays, Final Rule, 69 FR 55896, September 16, 2004, at 55918; for Final Economic Assessment, *see* Docket NHTSA-2000-8572-216.
- <sup>28</sup> Tire Pressure Monitoring Systems: Controls and Displays, Final Rule, 69 FR 55896, September 16, 2004, at 55918.
- <sup>29</sup> Tire Pressure Monitoring Systems: Controls and Displays, Final Rule, 69 FR 55896, September 16, 2004, at 55918.
- <sup>30</sup> *Public Citizen, Inc. v. Mineta*, No. 02-4237, 2003 U.S. App. (2d Cir. Aug. 6, 2003), at 41.
- <sup>31</sup> Tire Pressure Monitoring Systems: Controls and Displays, Final Rule [later vacated], 67 FR 38704, June 5, 2002, at 38717.
- <sup>32</sup> IQ-mobil cited by NHTSA at 67 FR 38717; ETV Corp Pty Ltd comments at NHTSA-2004-19054-26.
- <sup>33</sup> *Public Citizen, Inc. v. Mineta*, No. 02-4237, 2003 U.S. App. (2d Cir. Aug. 6, 2003), at 38.
- <sup>34</sup> *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. at 55.
- <sup>35</sup> *Public Citizen, Inc. v. Mineta*, No. 02-4237, 2003 U.S. App. (2d Cir. Aug. 6, 2003), at 38.