

**Tire Pressure Monitoring System – Special Study (TPMS-SS)  
Supporting Statement for Information Collection Request  
(Part A and C)**

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**January 2013**

TABLE OF CONTENTS

SUPPORTING STATEMENT

**A. Justification 1**

- A.1. Explain the circumstances that make the collection of information necessary.....1**
  - a. Circumstances necessitating the data collection.....1**
  - b. Statute authorizing the collection of information.....2**
- A.2. Indicate how, by whom, and for what purpose the information is to be used.....2**
- A.3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques.....4**
- A.4. Describe efforts to identify duplication.....4**
- A.5. If the collection of information impacts small businesses or other small entities, describe methods used to minimize burden.....4**
- A.6. Describe the consequence to Federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.....5**
- A.7. Explain any special circumstances that would cause the information collection to be conducted in a manner inconsistent with the guidelines set forth in 5 CFR 1320.6.....5**
- A.8. Provide a copy and identify the date and page number of publication in the Federal Register of the agency’s notice, required by 5 CFR 1320.8 (d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and describe actions taken by the agency in response to these comments. Describe efforts to consult with persons outside the agency to obtain their views.....5**
- A.9. Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.....5**
- A.10. Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy.....6**
- A.11. Provide additional justification for any questions of a sensitive nature,.....6**
- A.12. Provide estimates of the hour burden of the collection of information.....6**
- A.13. Provide an estimate of the total annual [non-hour] cost burden to respondents.....7**
- A.14. Provide estimates of annualized cost to the Federal government.....7**
- A.15. Explain the reasons for any program changes or adjustments reported in Items 13 or 14 of the OMB Form 83-1.....7**

- A.16. For collections of information whose results will be published, outline plans for tabulation, and publication.....7**
- A.17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.....8**
- A.18. Explain each exception to the certification statement identified in Item 19, Certification for Paperwork Reduction Act Submissions,” of OMB Form 83-1.....8**

**Tire Pressure Monitoring System – Special Study (TPMS-SS)  
Supporting Statement for Information Collection Request**

Approval is requested to conduct the *Tire Pressure Monitoring System – Special Study*.

**A. Justification**

**A.1. Explain the circumstances that make the collection of information necessary. Identify any legal or administrative requirements that necessitate the collection. Attach a copy of the appropriate section of each statute and regulation mandating or authorizing the collection of information.**

**a. Circumstances necessitating the data collection.**

Improperly inflated tires pose a safety risk, increasing the chance of skidding, hydroplaning, longer stopping distances, and crashes due to flat tires and blowouts. Section 13 of the Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act (Attachment A1), which Congress passed on November 1, 2000, directed NHTSA to conduct rulemaking actions to revise and update the Federal motor vehicle safety standards for tires, to improve labeling on tires, and to require a system in new motor vehicles that warns the operator when a tire is significantly underinflated.

Tire Pressure Monitoring Systems (TPMS) were mandated in Federal Motor Vehicle Safety Standard (FMVSS) No. 138 (Attachment A2), so that drivers are warned when the pressure in one or more of the vehicle's tires has fallen to 25 percent or more below the placard pressure, or a minimum level of pressure specified in the standard, whichever pressure is higher, and may be informed about which of the four tires is underinflated. As of September 1, 2007, after a phase-in period beginning on October 5, 2005, TPMS was required on all new light vehicles (i.e., passenger cars, trucks, multipurpose passenger vehicles, and buses with a gross vehicle weight rating of 10,000 pounds or less, except those vehicles with dual wheels on an axle).

Executive Order 12866 (Attachment A3) requires Federal agencies to evaluate their existing regulations and programs and measure their effectiveness in achieving their objectives. However, since the phase-in of TPMS, there has not been any evaluation of TPMS. The Tire Pressure Monitoring Systems – Special Study (TPMS-SS) is being planned in order to evaluate FMVSS 138 effectiveness, as well as to obtain information for use in decreasing the underinflation of tires via revisions to current regulations and/or consumer education.

To minimize data collection and training costs and to ensure accuracy of the data, the TPMS-SS is being conducted as a special study through the infrastructure of the National Automotive Sampling System (NASS). Trained NASS crash investigators will be the data collectors for the TPMS-SS. NASS collects nationally representative data on motor vehicle crashes for the National Highway Traffic Safety Administration (NHTSA). The collection of crash data that support the establishment and enforcement of motor vehicle regulations that reduce the severity of injury and property damage caused by motor vehicle crashes is authorized under the National

Traffic and Motor Vehicle Safety Act of 1966 (Public Law 89-563, Title 1, Sec. 106, 108, and 112) (Attachment A4). The OMB Control Number for the NASS is 2127-0021.

In addition to the safety risk posed by underinflated tires, vehicles traveling with underinflated tires use more fuel than similar vehicles traveling with properly inflated tires. Therefore, the proper inflation of vehicle tires is not only a safety concern but also one related to fuel economy. The Secretary of Transportation is required by the Energy Policy and Conservation Act, as amended by the Energy Independence and Security Act (EISA) of 2007 (P.L. 110-140) to prescribe annual fuel economy increases for automobiles (Attachment B). One of the controversial issues raised in the Regulatory Impact Analyses for fuel economy standards is how to quantify the benefits of fewer refuelings. If fuel economy of the vehicle increases, and the fuel tank size remains the same, drivers would have to refuel their vehicle less often. The issues are how much time is saved by how many passengers and whether that time is valued as work time or non-work time. Information such as these, the time and mileage driven to a gas station, and the reasons for refueling will be used in the calculations needed to analyze the effect of EISA on future fuel economy standards.

**b. Statute authorizing the collection of information**

Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act, Section 13, directs NHTSA to conduct rulemaking actions to revise and update the Federal motor vehicle safety standards to require a system in new motor vehicles that warns the operator when a tire is significantly underinflated. (See Attachment A1 for full text.)

Federal Motor Vehicle Safety Standard (FMVSS) No. 138 mandates Tire Pressure Monitoring Systems (TPMS). (See Attachment A2 for full text.)

Executive Order 12866 requires Federal agencies to evaluate their existing regulations and programs and measure their effectiveness in achieving their objectives. (See Attachment A3 for full text.)

The National Traffic and Motor Vehicle Safety Act of 1966, Title 15 United States Code 1395, Section 106 (b), gives the Secretary authorization to conduct research, testing, development, and training as authorized to be carried out by subsections of this title. The Vehicle Safety Act was subsequently re-codified under Title 49 of the U.S. Code in Chapter 301, Motor Vehicle Safety. Section 30168 of Title 49, Chapter 301, gives the Secretary authorization to conduct research, testing, development, and training to carry out this chapter. (See Attachment A4 for full text.)

The Energy Act of 2005 (P.L. 109-58) directs the Secretary to set, by regulation, average fuel economy standards by model year for automobiles manufactured by manufacturers. The Energy Act was subsequently revised by the Energy Independence and Security Act of 2007, EISA, (P.L. 110-140). EISA provides additional and modified guidance as to how the Secretary is to set these average fuel economy standards. (See Attachment B for full text.)

**A.2. Indicate how, by whom, and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection.**

There are seven forms that are being used to collect the survey data.

Two of the forms (i.e., Daily Site Information-Refueling and Daily Site Information-Tallies & Inspections) are used to observe the flow of vehicles at the gas stations and do not require any interaction with the drivers of the vehicles. Every two hours, beginning at the initial time of data collection for the day, the data collectors will observe, for a period of 15 minutes, the vehicles that enter the gas station to obtain gasoline. One data collector will tally the number and the body type of the vehicles; the other data collector will log the time it takes different types of vehicles to refuel, as well as the other activities in which the drivers engage, such as going into the gas station store or putting oil into the vehicle.

The two inspection forms (i.e., Vehicle Inspection Form and Tire Inspection Form) are completed via observation by one NASS researcher while another researcher conducts an in-person interview with the driver. The inspections forms are used to obtain information about the tires and the pressure in the tires, as well as information regarding the vehicle and the type of TPMS display being used.

There are two interview forms—50% of the drivers will be asked the questions on the tire pressure interview form and the other 50% of the drivers will be asked the questions on the refueling interview form. The tire pressure interview form will be used to obtain information regarding the history of the vehicle and its tires, as well as how air is added to the vehicle's tires (e.g., by whom, when, for what reasons). The refueling interview form will be used to obtain information regarding the driver's refueling habits, as well as characteristics of vehicle's occupants (e.g., number, reason for traveling).

There is one supplemental form to obtain information regarding the drivers' knowledge of their TPMS (e.g., location and purpose of the warning lamp and the malfunction lamp, how to reset the lamps, and what service has been required of the TPMS). This form will be delivered in four different formats to allow the drivers a choice of the type of format that they would like to use—an on-site interview, a mail-back questionnaire, an on-line questionnaire, and a call-back interview.

Results from the TPMS-SS will be used by NHTSA analysts and engineers to assess the extent to which tire pressure monitoring systems improve the situation of under-inflated tires for passenger vehicles in the United States. Current estimates of the effectiveness of TPMS will be used by NHTSA to determine if revisions to the standard are necessary. Information about consumers' purposes for travel and refueling habits and preferences, as well as the time spent in refueling, will be used by NHTSA analysts in calculations in the Regulatory Impact Analyses needed to analyze the effect of EISA on fuel economy. In addition, data on the drivers' familiarity with the type of warning given by their TPMS and the action(s) that they have taken after being warned will be used to assess current consumer knowledge, as well as the benefits of increased consumer education and other outreach efforts concerning tires, tire pressure, and tire pressure monitoring systems.

The information obtained from the 2001 Tire Pressure Special Study (TPSS) and the 2003 Tire Pressure Monitoring System Study (TPMSS) were used by the agency in the developing Federal

Motor Vehicle Safety Standard (FMVSS) No. 138, which mandates Tire Pressure Monitoring Systems (TPMS) in all new light vehicles.

**A.3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms of information technology. Also describe any consideration of using information technology to reduce burden.**

This collection of information does not involve the use of technological collection techniques. NHTSA feels the use of simple paper and pencil forms is cost effective (because of not having to purchase the design, software or equipment to collect the data electronically), and provides a less formal and more comfortable environment for the interviewed motorists. While the data collectors will not use electronic devices such as Personal Data Assistants, the collected data will be entered into an electronic database and NHTSA will receive 100 percent of the results of the data collection in electronic files.

**A.4. Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for use for the purposes described in Item 2 above.**

Although a one time Tire Pressure Special Study (TPSS) was conducted in 2001 to collect trial data, the study sample included too few vehicles equipped with tire pressure monitoring systems to perform thorough analyses. A second study was begun in 2003 but was truncated. At the time of both of these studies, indirect TPMS systems were much more prevalent than direct monitoring TPMS systems. All systems produced to meet the standard have been direct monitoring TPMS systems. In addition, this second study and the initial 2001 study were conducted in advance of the mandate's effective dates and much publicity about the need to keep tires inflated. The vehicles equipped with TPMS, primarily trucks/SUVs and high-end passenger cars, were not representative of the overall on-road vehicle fleet. It is also possible that the widespread application of TPMS has resulted in technological changes and adaptations in driver behavior. Hence, this data collection entails no duplication, since this study will generate data for which no similar information is available. In regard to the questions dealing with refueling, we are not aware of any other set of data that would be applicable.

**A.5. If the collection of information impacts small businesses or other small entities, describe methods used to minimize burden.**

The collection of information involves drivers of selected vehicle types, not small businesses. Potential survey sites, gas stations, will be contacted in advance to see if they would be willing to voluntarily grant permission to conduct the survey at their establishment. Businesses will be fully informed as to the nature of the survey operations, as well as the amount of time required for the data collection activities.

**A.6. Describe the consequence to Federal program or policy activities if the collection is not conducted or is conducted less frequently, as well as any technical or legal obstacles to reducing burden.**

NHTSA knows of no previous study that has nationally representative estimates of the effectiveness of a tire pressure monitoring system. Consequently, if this study is not conducted, real-world data to evaluate Federal Motor Vehicle Safety Standard (FMVSS) 138 would not be available. In addition, if NHTSA does not collect this information, it will not have scientifically-based information from actual motorists on the use of TPMS with which to better target Agency outreach efforts. Finally, without data on refueling, the calculations needed to be made for EISA will continue to be made based upon assumptions.

**A.7. Explain any special circumstances that would cause the information collection to be conducted in a manner inconsistent with the guidelines set forth in 5 CFR 1320.6.**

There are no circumstances requiring information to be collected in a manner inconsistent with the guidelines in 5 CFR 1320.6.

**A.8. Provide a copy and identify the date and page number of publication in the Federal Register of the agency's notice, required by 5 CFR 1320.8 (d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and describe actions taken by the agency in response to these comments. Describe efforts to consult with persons outside the agency to obtain their views.**

**FEDERAL REGISTER NOTICES:**

A copy of the 60-Day Federal Register Notice is provided in Attachment C1. The Notice appeared in the Federal Register, Volume 77, Number 238, pages 73736-73737, Tuesday, December 11, 2012. The closing date for comments was February 11, 2013.

A copy of the 30-Day Federal Register Notice is provided in Attachment C2. The Notice appeared in the Federal Register, Volume 78, Number 31, pages 10685-10686, Thursday, February 14, 2013.

**EXPERT CONSULTATION:** Experts within NHTSA played vital roles in the design of the baseline survey instrument.

**A.9. Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.**

No payment will be made to respondents in the survey.



**A.10. Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy.**

Respondents are informed in the survey introduction that their answers will be kept private, used only for statistical purposes, and the data will be protected to the full extent of the law. Participation in the survey is voluntary. No identifying information for interviewees will be obtained during data collection or entered into any system of records for all of the interviewees surveyed on-site. A small sub-set of interviewees (i.e., those who have TPMS, do not have time to answer the questions on the supplemental form on-site, and who volunteer to be contacted at a later date) will have contact information recorded so that the researcher can contact them later to administer the supplemental survey form off-site, but identifying information for the interviewees will be destroyed and will not be entered into the final data file.

**A.11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private.**

The survey does not contain any questions related to matters that are commonly considered sensitive or private.

**A.12. Provide estimates of the hour burden of the collection of information on the respondents. Provide estimates of annualized cost to respondents for the hour burdens for collections of information, identifying and using appropriate wage rate categories.**

Averages from the previous tire studies were used to determine the time it would take to collect vehicle, tire, and driver data.

While there are seven forms, only three of them (i.e., Interview Form-Fuel, Interview Form-TPMS, and Supplemental Form) will place burden on the respondents (i.e., the vehicles' drivers). Two of the forms (i.e., Daily Site Information-Refueling and Daily Site Information-Tallies & Inspections) are used to observe the flow of vehicles at the gas stations and do not require any interaction with the drivers of the vehicles. Two other forms (i.e., Vehicle Form and Tire Form) are completed via observation by one NASS researcher while another researcher conducts an in-person interview with the driver to collect driver information on one or the other of the two different Interview Forms. It is estimated that the burden for the Interview Forms will be slightly over 10 minutes for each interview (or a total of 1750 hours) for 10,000 respondents (i.e., 5,000 respondents for the Interview Form-Fuel and 5,000 respondents for the Interview Form-TPMS). In addition, there will be an additional 10 minutes for each of the 1,050 respondents (or a total of 175 hours) who have TPMS in their vehicles and who volunteer to answer a few additional questions (i.e., the Supplemental survey form) about their tire pressure monitoring system. Consequently, the total respondent burden hours is estimated to be 1,925 hours for both of the Interview Forms and for the Supplemental Form.

If cost to the respondents of their voluntary hours is looked at in terms of an hourly wage based upon the average income level in the United States, the Mean Hourly Wage Estimate of \$20.32 per hour (U.S. Dept. of Labor, Bureau of Labor Statistics, 2009) can be used to estimate annualized costs to respondents at 1750 hours x \$20.32 = \$35,560 for the Interview Form alone; 175 hours x \$20.32 = \$3,556 for the Supplemental Form alone, and 1,925 hours x \$20.32 = \$39,116 for both forms together. (See Table 1 below)

Additionally, each respondent will receive a card on which the NASS Data Collectors will have recorded the Manufacturers Recommended Tire Pressure and the Tire Pressure the Data Collectors read for each of the vehicle's tires. Consequently, the respondent is receiving benefit in return for his/her participation.

**Table 1. Cost Burden on Respondents**

<b>Survey Form</b>	<b>N</b>	<b>Cost per Hour</b>	<b>Hours</b>	<b>Total Cost</b>
Interview	10,000	\$20.32	1,750	\$35,560
Supplemental	1,050	\$20.32	175	\$3,556
<b>TOTAL</b>	<b>11,050</b>	<b>\$20.32</b>	<b>1,925</b>	<b>\$39,116</b>

**A.13. Provide an estimate of the total annual [non-hour] cost burden to respondents or record keepers resulting from the collection of information. (Do not include the cost of any hour burden shown in Items 12 and 14).**

There are no costs to respondents or record keepers associated with participating in this survey.

**A.14. Provide estimates of annualized cost to the Federal government.**

No estimates of cost are available at this time, as currently beginning plans for a later survey.

**A.15. Explain the reasons for any program changes or adjustments reported in Items 13 or 14 of the OMB Form 83-1.**

An extension, without any changes, is being requested. There is not any change to the burden hours of 1,925 that were initially requested in 2010.

**A.16. For collections of information whose results will be published, outline plans for tabulation, and publication.**

On 11/19/12, NHTSA published an initial evaluation report, *Evaluation of the Effectiveness of TPMS in Proper Tire Pressure Maintenance*. The report analyzed preliminary survey data of

6,103 vehicle observations, including tire pressure of all four tires. It was found that the presence of tire pressure monitoring systems (TPMS) on a vehicle of model years 2004 to 2007 reduces by an estimated 56 percent the likelihood that the vehicle will have one or more severely underinflated tires as defined by FMVSS No. 138 (25% or more below the vehicle manufacturer's recommended cold tire pressure). Since proper inflation enhances fuel economy, TPMS is estimated, during the first eight years of operation, to save, on the average, 9 gallons of fuel consumption in passenger cars and 28 gallons in LTVs. NHTSA plans to conduct further research to determine the effect of TPMS on the incidence of tire-related crashes and injuries.

In addition to this published report, the data from the refueling portion of the survey has been used in the calculations needed to analyze the effect of the Energy Independence and Security Act of 2007 on fuel economy.

**A.17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.**

The expiration date for OMB approval will be displayed on all survey forms. NHTSA is not seeking approval to not display the expiration date.

**A.18. Explain each exception to the certification statement identified in Item 19, Certification for Paperwork Reduction Act Submissions," of OMB Form 83-1.**

No exception is requested to any of the items in the certification statement.