NHTSA Tire Pressure Monitoring System—Outage Rates and Repair Costs

Suppliers Survey

United States Department of Transportation
National Highway Traffic Safety Administration

Thank you in advance for your time in completing the NHTSA Tire Pressure Monitoring System—Outage Rates and Repair Costs (TPMS-ORRC) Survey. You are being asked to complete this survey because your company has been identified as a possible supplier of TPMS components or systems. While your participation is important to NHTSA, it is entirely voluntary. Your input will remain anonymous and the survey is not part of any recall investigation. **No specific information on pricing or intellectual property will be released to the public.** Only aggregate information will be reported.

If you wish to return this questionnaire under a claim of confidentiality, please take the following steps:

1. Send 3 copies of the complete submission, including the information your company claims to be confidential business information, to:

   Chief Counsel, National Highway Traffic Safety Administration
   1200 New Jersey Avenue, SE
   Washington, DC 20590

   The complete package should be in conformance with 49 CFR Part 512.

2. Send 1 copy of the completed survey to ICF International with the confidential business information deleted to:

   ICF International, Inc.
   TPMS-ORRC Survey
   980 Beaver Creek Drive
   Martinsville, VA 24112

When filling out the following form, please:

1. Fill in the ovals completely
2. For numbers, print ***legibly*** within the boxes. Example: **|0|5|.**
3. For written explanations, print ***legibly*** on or within the lines.
4. Please do not make any stray marks.

If you have any questions or concerns, please contact ICF.

SECTION 1. INTRODUCTION

When completing this survey, please consider the sources of TPMS malfunction of which you and your company are aware, the number of replacement components or systems that are distributed by your company, and the price of those components. For this survey, a TPMS malfunction is defined as any time a TPMS system is not working correctly—including problems with the sensors or the on-board components.

SECTION 2. TPMS MALFUNCTION SOURCES

1. Is your company involved in the design, manufacture or other aspects of the TPMS supply industry? *Please choose <u>one</u> response.*

O Yes, direct systems only
O Yes, indirect systems only
O Yes, both direct and indirect systems
O No → *GO TO SECTION 5*

IF YES TO Q1:

1a. For each category of direct and indirect TPMS components listed below, please indicate the role(s) your company serves in the TPMS supply chain. If your company is not involved with a specific component, leave the entire row for that component blank.

	Component	Company Role (SELECT ALL THAT APPLY)				
		Technology Development	System Engineering	Manufacturing	Marking / Distribution	Other: Specify
DIRECT	a. Rim-mounted sensor	O	O	O	O	
DIRECT	b. Stem-mounted sensor	O	O	O	O	
DIRECT	c. On-board hardware (e.g., processing unit)	O	O	O	O	
DIRECT	d. Software	O	O	O	O	
INDIRECT	e. Chassis-mounted sensor (e.g., wheel speed sensor)	O	O	O	O	
INDIRECT	f. On-board hardware (e.g., processing unit)	O	O	O	O	
INDIRECT	g. Software	O	O	O	O	

IF YOU INDICATED <u>INDIRECT SYSTEMS ONLY</u> IN Q1., GO TO Q3

SECTION 2. TPMS MALFUNCTION SOURCES (continued)

2. In general, when <u>direct</u> TPMS malfunctions occur, how often are they associated with the following equipment?

	Almost Always	Often	Sometimes	Rarely	Almost Never
a. Tire pressure sensor battery (e.g., depleted)	O	O	O	O	O
b. Tire pressure module (e.g., damaged, corroded)	O	O	O	O	O
c. On-board hardware (e.g., TPMS receiver failure)	O	O	O	O	O
d. Software (e.g., false warning light indication)	O	O	O	O	O
e. Other *Specify*:	O	O	O	O	O

☞ ***IF YOU INDICATED <u>DIRECT SYSTEMS ONLY</u> IN Q1., GO TO Q4***

3. In general, when <u>indirect</u> TPMS malfunctions occur, how often are they associated with the following equipment?

	Almost Always	Often	Sometimes	Rarely	Almost Never
a. Chassis sensors (e.g., damaged)	O	O	O	O	O
b. On-board hardware (e.g., wheel speed sensor failure)	O	O	O	O	O
c. Software (e.g., false warning light indication)	O	O	O	O	O
d. Other *Specify*:	O	O	O	O	O

4. What sources of information informed your ratings to the preceding question about TPMS component replacement? *Please select all that apply.*

O Feedback from customers
O Field surveys
O Warranty reports
O Other: Specify _____

SECTION 3. TPMS DESIGN

5. Please think about any major design changes your company has made to TPMS parts *in the last 5 model years*. For each TPMS part in the table below, please indicate the following:

1) The number of major design changes your company has made,
2) How many of these changed designs were still interchangeable with parts in older vehicles,
3) Which model years were affected by these changes, and
4) The cumulative effect of all of these design changes for this part (e.g., increased durability, increased accuracy)

If your company has not made any major changes to a component in the last 5 model years, leave that entire row blank.

		MAJOR CHANGES IN THE LAST 5 MODEL YEARS			
	Component	Number of Major Changes	Number Inter-changeable	Model Years Affected	Cumulative Result
DIRECT	a. Rim-mounted sensor				
DIRECT	b. Stem-mounted sensor				
DIRECT	c. On-board hardware (e.g., processing unit)				
DIRECT	d. Software				
INDIRECT	e. Chassis-mounted sensor (e.g., wheel speed sensor)				
INDIRECT	f. On-board hardware (e.g., processing unit)				
INDIRECT	g. Software				

6. If your company is planning any major design changes to TPMS parts in the next five model years, please briefly describe them below:

SECTION 4. TPMS REPAIR PRICE

7. What is your average price of a TPMS system (sensor, module, etc.) for the types of customers listed in the table below? Please indicate the price point in the supply chain (e.g., as sold to vehicle manufacturer or end-retail customer). Please also include your volume range for the price. If your company does not supply a particular type of customer, leave that entire row blank.

		DIRECT Systems		INDIRECT Systems	
	Customer Type	**Price**	**Volume Range**	**Price**	**Volume Range**
a. b.	c. Vehicle manufacturer	$		$	
d. e.	f. Aftermarket parts wholesaler	$		$	
g. h.	i. Service facility	$		$	
j. k.	l. End-retail customer	$		$	

IF YOU INDICATED <u>INDIRECT SYSTEMS ONLY</u> IN Q1., GO TO Q9

8. What is your average price for the following commonly replaced <u>direct</u> TPMS parts? Please indicate the price point in the supply chain (e.g., as sold to TPMS system integrator, vehicle manufacturer).

Customers of Direct TPMS Systems	**Direct sensor module (in-wheel, both stem and rim)**	**On-board Hardware (e.g., Processing Unit)**	**Software**
a. TPMS system integrator	$	$	$
b. Vehicle manufacturer	$	$	$
c. Aftermarket wholesaler	$	$	$
d. Service facility	$	$	$
e. End-retail customer	$	$	$

IF YOU INDICATED <u>DIRECT SYSTEMS ONLY</u> IN Q1., GO TO SECTION 5

9. What is your average price for the following commonly replaced <u>indirect</u> TPMS parts? Please indicate the price point in the supply chain (e.g., as sold to TPMS system integrator, vehicle manufacturer).

Customers of Indirect TPMS Systems	**Indirect sensing components**	**On-board Hardware (e.g., Processing Unit)**	**Software**
a. TPMS system integrator	$	$	$

b. Vehicle manufacturer	$	$	$
c. Aftermarket wholesaler	$	$	$
d. Service facility	$	$	$
e. End-retail customer	$	$	$

SECTION 5. END

Thank you! You have completed the survey.

The information you have provided will help NHTSA better understand how current TPMS systems serve their intended function in the real world.

Please return this survey in the postage-paid envelope provided.

See the front page for instructions.