

## INTRODUCTION



The CarMD® Vehicle Health Index™ reports on the most common check engine light-related problems, repairs and associated repair costs. Now in its fourth year, this Index provides consumers, media, the automotive industry and fleet managers with year-over-year car repair data, shedding light on trends influencing the type and cost of repairs.

### IN THIS INDEX YOU WILL FIND:

25 MOST COMMON VEHICLE REPAIRS  
IN THE U.S. – 2014

OVERVIEW OF THE 10 MOST COMMON  
CHECK ENGINE LIGHT REPAIRS – 2014

9-YEAR HISTORY OF U.S. CAR REPAIR COSTS,  
INCLUDING PARTS & LABOR – 2006 - 2014

BREAKDOWN OF CAR REPAIR ISSUES  
BY REGION – 2014

10 MOST EXPENSIVE CHECK ENGINE  
LIGHT REPAIRS – 2014

10 LEAST EXPENSIVE CHECK ENGINE  
LIGHT REPAIRS – 2014

### SOURCE: From Where Does CarMD's Index Data Originate?

Beginning in 1996, the U.S. government mandated on-board diagnostics (OBD2) for all foreign and domestic cars, light trucks, minivans and SUVs sold in the United States. The system provides vital health and safety information for approximately 80% of a vehicle's systems, and is currently installed on more than 85% of vehicles nationwide, including newer hybrids and diesels. It can be accessed by a range of diagnostic tools used throughout the industry. The system triggers the check engine light when a problem is found; alerting the driver to an issue that potentially affects emissions output, fuel economy, driveability and cost of ownership.

Since 1996, CarMD has been building the most comprehensive database of OBD2-related expert fixes and repair costs. These repairs come directly from the cars themselves and the professionals who service them. As a result, CarMD is able to provide unbiased data on repair costs and trends. This 2015 Index statistically analyzes more than 98,000 repairs in the U.S. CarMD's network of thousands of Automotive Service Excellence (ASE)-certified, factory-trained technicians recommend, confirm and upload new repair scenarios daily to the CarMD database, which are then validated by the company's Master Tech committee of top industry professionals. This data is then used to compile the CarMD® Vehicle Health Index™.



## INTRODUCTION

### SUMMARY OF FINDINGS:

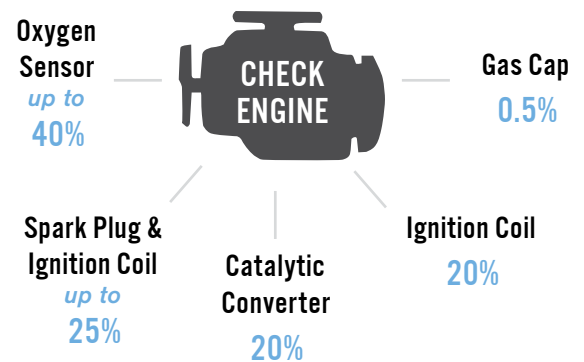
After two years of increases, 2014 saw virtually no change (up only 0.6%) in car repair costs with a 2.7% increase in average labor costs offset by a 2.8% decrease in parts costs. The oxygen sensor, which can negatively affect fuel economy by as much as 40%, remained the most common check engine light repair, followed by the catalytic converter, fuel cap, ignition coil and spark plugs combined, and ignition coil(s) alone. Car repair costs were up only slightly across each U.S. region with the West experiencing the biggest increase – up 4.6%. All but two of the 10 most common repairs saw decreases or no change in average parts and labor cost, including “replace oxygen sensor” with a 1% decrease in average repair cost from \$261 in 2013 to \$259 in 2014.

Hybrid repair costs were up and down but “replace hybrid inverter assembly” dropped as much as 50%. The most expensive repair seen in 2014 by CarMD’s network was “replace transmission assembly,” costing \$6,400. However, evidencing the notion that drivers should not panic when their car’s check engine light comes on, there were three related problems (5% of repairs) that were free to fix: “check oil level and viscosity,” “remove USB device” and “tighten loose gas cap.”

New to the top 10 list of common check engine repairs this year are “replace thermostat” and “replace fuel injectors.” Those who own or are responsible for servicing vehicles should know that some parts like the thermostat have to work harder and may need to be replaced more frequently in extreme temperature environments. The fuel injectors can be susceptible to clogging from fuel tank debris resulting from frequently driving with the fuel light on, fueling up with low-grade gas or putting off regular maintenance such as fuel filter replacement.

CarMD distributes this Index each April during Car Care Awareness Month as a reminder to pay attention to scheduled maintenance needs to help avoid unscheduled repairs and dashboard warning light surprises.

### MOST COMMON REPAIRS AND MPG REDUCTION IF IGNORED

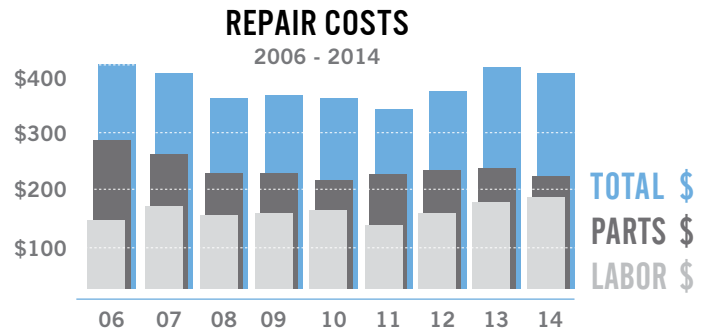


Source: CarMD.com Corp. 2015.

## HIGHLIGHTS

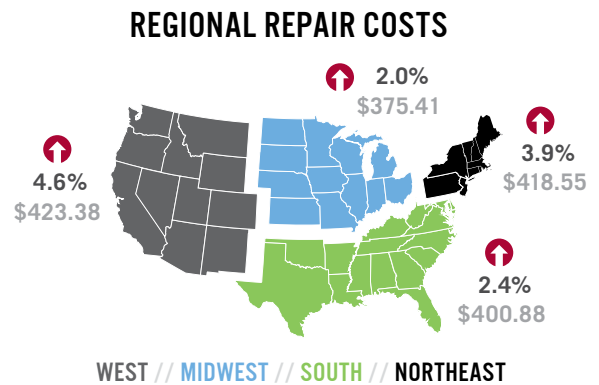
**Car repair costs** across the U.S. were flat in 2014 with virtually no year-over-year change from 2013 to 2014.

- Average repair costs in 2014 were \$390.38 (comprised of \$161.61 in labor and \$228.77 in parts). This was a half-percent lower than 2013 (\$392.49).
- Labor costs were up 2.77%
- Parts costs were down 2.80%



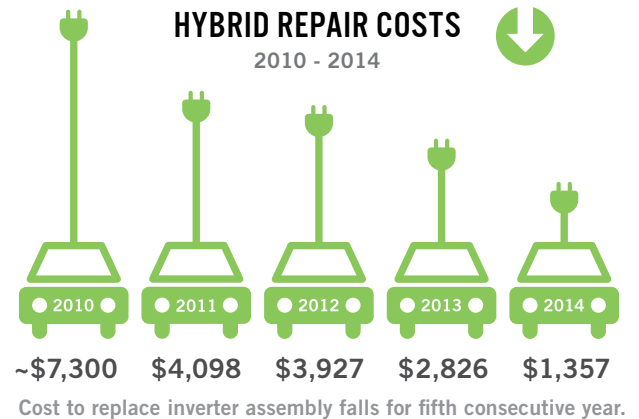
Repair costs vary by region, but a faulty O2 sensor is the no. 1 repair coast to coast.

- In 2014, drivers in the West paid the most for car repairs (\$423.38 on average), including \$265.99 for an O2 sensor.
- Drivers in the Midwest paid the least for check engine issues (\$375.41), including \$246.33 for an O2 sensor.
- Northeast drivers paid \$418.55 on average for parts and labor, including \$263.06 for an O2 sensor.
- Drivers in the South paid \$400.88 for repairs; \$259.46 to replace an O2 sensor.



In 2014, some Hybrid repair costs increased, while others dropped.

- "Replace Hybrid Battery" cost on average \$3,478 in 2014, up 11% from 2013.
- "Replace Hybrid Inverter Assembly" (\$1,347) is down 50% from 2013 and dropping for a fifth consecutive year.



CarMD's experts encourage drivers to have dashboard warning lights looked at as soon as possible. The repair is often low- or no-cost.

- In 2014, more than 5% of check engine light incidents resulted in free repairs.

**NO NEED TO PANIC!**

>5% OF CHECK ENGINE ARE FREE

## DETAILED INDEX DATA

### The Top 25 Most Common Check Engine Vehicle Repairs in the U.S. – 2014

Rank	Vehicle Repair	Total Average Repair Cost (Parts&Labor)	% 2014 Repairs	Change In Rank Since 2013
1	Replace Oxygen Sensor(s) (O2S)	\$259.30	7.10%	1- No Change
2	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$1,157.27	5.89%	3 -
3	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.01	5.40%	2 -
4	Replace Ignition Coil(s) and Spark Plug(s)	\$413.92	3.58%	7 -
5	Replace Ignition Coil(s)	\$247.39	3.57%	6 -
6	Replace Mass Air Flow (MAF) Sensor	\$408.62	3.54%	5 -
7	Replace Spark Plug Wires and Spark Plugs	\$361.56	3.28%	4 -
8	Replace Thermostat	\$213.20	2.18%	13 -
9	Replace Exhaust Gas Recirculation (EGR) Valve and Clean All EGR ports	\$349.88	1.95%	9 - No Change
10	Replace Fuel Injector(s)	\$554.36	1.75%	17 -
11	Replace Wheel Speed Sensor(s)	\$242.23	1.60%	12 -
12	Inspect Battery and Charging System and Repair as Necessary	\$109.38	1.58%	8 -
13	Replace Camshaft Position Sensor (CMP)	\$214.94	1.55%	18 -
14	Replace Evaporative Emissions (EVAP) Purge Control Valve	\$181.40	1.44%	New to Top 25
15	Replace Evaporative Emissions (EVAP) Purge Solenoid	\$180.22	1.40%	21 -
16	Replace Intake Manifold Gasket(s)	\$442.36	1.31%	16 - No Change
17	Replace ABS Control Module	\$839.29	1.16%	14 -
18	Replace Engine Coolant Temperature Sensor (ECT)	\$174.00	1.12%	19 -
19	Replace Throttle Body Assembly	\$570.60	1.10%	23 -
20	Replace Evaporative Emissions (EVAP) Canister Vent	\$217.56	0.94%	Back on Top 25
21	Replace Air/Fuel Ratio Sensor (AFR)	\$355.58	0.90%	Back on Top 25
22	Replace Crankshaft Position Sensor (CKP)	\$237.47	0.87%	22 - No Change
23	Replace Differential Pressure Feedback (DPFE) Sensor	\$209.65	0.86%	Back on Top 25
24	Replace Fuel Tank Pressure (FTP) Sensor	\$338.88	0.84%	New to Top 25
25	Replace Positive Crankcase Ventilation (PCV) Valve and Hose	\$135.78	0.79%	11 -

*Top 25 most common vehicle repairs are based on 98,051 repairs made in calendar year 2014 on 1996-2015 model year vehicles.*

*This data applies to > 85% of cars, light trucks, minivans, SUVs and hybrids on the road in the U.S. – foreign and domestic. Source: CarMD.com Corp. 2015.*



## THE TOP TEN

### MOST COMMON CHECK ENGINE LIGHT REPAIRS

**1** **The most common car repair (7.10%) in 2014 was “replace oxygen sensor.”** Extremely important to a car's engine performance and to the environment, the O2 sensor measures the amount of unburned oxygen in the exhaust and tells a car's computer when there is either too much, or not enough fuel as compared with oxygen for ideal operation. O2 sensors fail prematurely due to a variety of causes, including lack of maintenance like neglecting oil changes or engine contamination from internal coolant leaks. A faulty O2 sensor costs less than \$260 to fix but can lead to as much as a 40% reduction in gas mileage if ignored. Many drivers ignore the O2 sensor because their car often seems like it's driving just fine, but in reality it's reducing your fuel economy and slowly doing more damage to your car.

- The average cost to replace O2 sensor dropped slightly from \$261 in 2013 to \$259 in 2014, comprised of \$114 for labor and \$145 in parts.

**2** **The second most common repair, “replace catalytic converter(s),” accounted for 5.89% of repairs in 2014, dropping slightly from 6.10% of repairs the previous year but moving the wrong direction in the rankings (in the no. 3 spot last year).** In most cases, a catalytic converter won't fail unless a related part – such as a spark plug – is ignored for too long.

- The average cost to replace a catalytic converter rose minutely from \$1,154 in 2013 to \$1,157 in 2014.

**3** **Once the most common check engine light trigger, “tighten or replace fuel cap” drops to the third most common repair.** It accounted for 7.10% of repairs in 2014. Missing or damaged gas caps can cost time and money, triggering the check engine light and a repair shop visit. Faulty gas caps allow millions of gallons of fuel to evaporate every year. If left unchecked a gas cap problem can cause reduced fuel economy and harm the environment.

- The average cost to diagnose a loose gas cap is only a penny, meaning most just need to be tightened versus replaced, which cost roughly \$30 for the part.

**4** **“Replace ignition coil and spark plugs” is now the fourth most common repair accounting for 3.58% of fixes in 2014.** This is an example of how ignoring a smaller problem like a spark plug can snowball into the need for more than one repair. Spark plugs and ignition coils work together to help the engine start, and keep running. The coils take the battery's 12-volt current and step it up to ignite the spark plugs. Faulty spark plugs can trigger ignition coil failure, which is why they are often replaced simultaneously. High underhood temperatures and age can also cause them to fail.

- The cost to replace ignition coil(s) and spark plug(s) in 2014 was \$413.

**5** **The no. 5 most common repair (3.57%) in 2014 was “replace ignition coil(s).”** Ignition coils help the engine start and keep running. They take the battery's 12-volt current and step it up to ignite the spark plugs. Your car may have only one ignition coil, or as many as it has cylinders. Several conditions can contribute to its failure, including faulty spark plugs, high underhood temperatures and age. A driver should pay attention to possible symptoms surrounding engine coil failure as it will soon affect other vehicle systems, such as the costly catalytic converter, and can leave them stranded by the roadside.

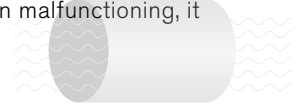
- The cost to replace ignition coil(s) in 2014 was \$247.

## THE TOP TEN MOST COMMON CHECK ENGINE LIGHT REPAIRS

# 6

**The sixth most common repair (3.54%) is “replace mass air flow sensor (MAF),”** which is responsible for metering the air coming into your car’s engine and determining how much fuel to inject into the engine. When malfunctioning, it can lower fuel economy by 10% to 25%.

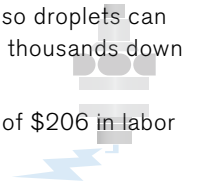
- It costs on average \$408 on average to repair, but is vital to saving dollars at the pump.



# 7

**The spark plug drops to the seventh most common check engine-related repair (3.28%).** Responsible for igniting a car’s air/fuel ratio, spark plugs are essential. When they fail they can cause a “misfire,” reduce gas mileage and eventually damage a catalytic converter. When the weather turns cold fuel doesn’t vaporize as easily so droplets can form and foul the plug. The cost to replace a spark plug yourself can be as little as \$10, but can save thousands down the road.

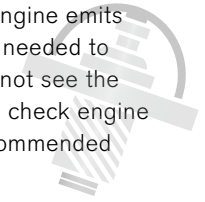
- The average cost to replace spark plug(s) and spark plug wire(s) in 2014 was \$361, comprised of \$206 in labor and \$155 in parts.



# 8

**New to the list in 2014, “replace thermostat” comes in as the eighth most common repair.** A car’s thermostat regulates the engine coolant temperature to warm and cool to ideal “operating temperature.” A warm engine emits fewer emissions, which is affected by the thermostat’s efficiency. The thermostat opens and closes as needed to regulate temperature. When a thermostat fails, it often gets stuck open. If the vehicle’s computer does not see the engine coolant temperature rise to “operating temperature” within a fixed amount of time, it will set the check engine light. A vehicle’s thermostat can become rusty and fail prematurely if the coolant is not changed at recommended mileage intervals, or the vehicle is subjected to extreme temperatures or an acidic environment.

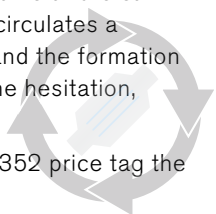
- The average cost to replace a thermostat was \$212 in 2014.



# 9

**The ninth most common check engine-related repair is “replace exhaust gas recirculation (EGR) valve and clean EGR ports.”** EGR helps your car run more efficiently and helps control emissions. The EGR valve re-circulates a portion of the exhaust back through the combustion process, lowering the combustion temperature and the formation of nitrous oxide emissions. A faulty EGR valve or blocked EGR passage can cause rough idling, engine hesitation, misfire and poor fuel economy.

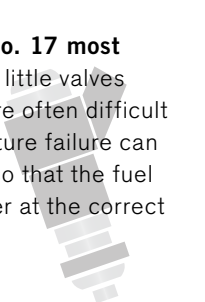
- The average cost to replace an EGR valve in 2014 was \$349, essentially no change from its \$352 price tag the previous year.



# 10

**Rounding out the top 10 is “replace fuel injector(s),” new to the top 10 list after ranking as the no. 17 most common repair one year ago.** Without fuel injectors, the engine does not run. They are comprised of little valves that atomize fuel into a fine mist to inject fuel into the engine for combustion. Fuel injectors, which are often difficult to diagnose, can fail by leaking, becoming clogged or as the result of a solenoid shorting out. Premature failure can be prevented by using name brand fuel and keeping the fuel tank level above one-quarter of a tank so that the fuel pump does not pick up debris that may be in the bottom of the fuel tank. Replacing the car’s fuel filter at the correct intervals will also help the injectors live longer.

- The average cost to have a fuel injector replaced was \$554 in 2014.



## REPAIR COSTS/NATIONAL DATA

U.S. Average Car Repair Cost Trends (9-Year History)  
(2006 – 2014); Source: CarMD.com Corp.

Year	Labor	Parts	Total Average Repair Cost
2014	\$161.61	\$228.77	\$390.38
2013	\$157.23	\$235.26	\$392.49
2012	\$138.96	\$228.88	\$367.84
2011	\$118.61	\$215.32	\$333.93
2010	\$143.61	\$212.44	\$356.04
2009	\$138.37	\$221.13	\$359.50
2008	\$135.21	\$220.98	\$356.19
2007	\$152.92	\$256.98	\$409.91
2006	\$131.06	\$291.30	\$422.36

### AVERAGE REPAIR COST

2014

COST OF LABOR  
\$161 // 41%



COST OF PARTS  
\$229 // 59%



## REPAIR COSTS/REGIONAL DATA

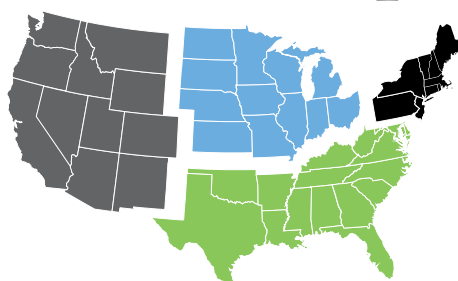
In 2014, the national average for automotive repair labor costs increased just 0.6% from the previous year. Labor costs increased 2.7% and parts costs decreased 2.8%.

- Despite a slight decrease in average repair cost nationally, costs were up slightly in each region of the U.S.
- Vehicle owners in the West paid the most for check engine-related car repair – 12% more than drivers in the Midwest, who paid the least.

A faulty O2 sensor is the no. 1 repair from coast to coast, but the cost to replace an O2 sensor varies by region.

- In 2014, drivers in the Western U.S. paid \$265.99 (the most) to replace an O2 sensor.
- In 2014, drivers in the Midwest paid \$246.33 (the least) to replace an O2 sensor.
- In 2014, drivers in the Northeast paid \$263.06 to replace an O2 sensor.
- In 2014, drivers in the South paid \$259.46 to replace an O2 sensor.

### REGIONAL REPAIR COSTS FOR O<sub>2</sub> SENSOR



WEST // MIDWEST // SOUTH // NORTHEAST  
 \$266 // \$246 // \$259 // \$263





### U.S. National & Regional Average Check Engine-Related Repair Costs 2014 vs. Previous Year (Source: CarMD.com Corp.)

Region	Total Average Repair Costs (2013)	Total Average Repair Costs (2014)	% Increase / Decrease From Previous Year
U.S.	\$392.49	\$390.38	↑ Up 0.6%
West	\$404.53	\$423.38	↑ Up 4.6%
South	\$391.39	\$400.88	↑ Up 2.4%
Northeast	\$402.73	\$418.55	↑ Up 3.9%
Midwest	\$368.04	\$375.41	↑ Up 2.0%



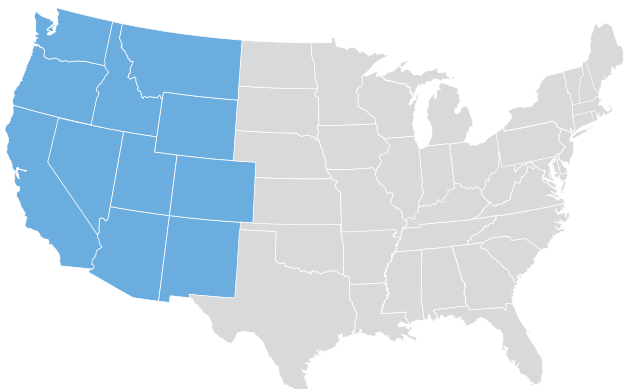
## DETAILED INDEX DATA

### The Top 10 Most Common Check Engine Vehicle Repairs in the Western U.S. – 2014

Rank	Vehicle Repair	Total Average Repair Cost (Parts & Labor)	% 2014 Western U.S. Repairs	Change In Western Rank Since 2013
1	Replace Oxygen Sensor(s) (O2S)	\$265.99	6.31%	No Change
2	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$1,180.81	4.79%	3 - 
3	Replace Mass Air Flow (MAF) Sensor	\$407.39	4.15%	4 - 
4	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.43	3.61%	2 - 
5	Replace Spark Plug Wires and Spark Plugs	\$354.69	3.20%	No Change
6	Replace Ignition Coil(s)	\$248.60	3.16%	No Change
7	Replace Ignition Coil(s) and Spark Plug(s)	\$429.84	2.57%	8 - 
8	Replace Thermostat	\$214.47	1.98%	New to Top 10
9	Replace Exhaust Gas Recirculation (EGR) Valve and Clean All EGR ports	\$366.98	1.79%	No Change
10	Replace Camshaft Position Sensor (CMP)	\$234.08	1.73%	No Change

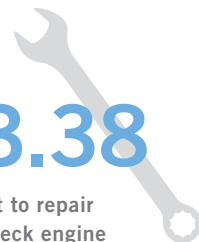
*Top 10 most common vehicle repairs in the Western U.S. are based on 20,718 repairs in 2014 in AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA and WY. This data applies to roughly 85% of cars, light trucks, minivans and SUVs on the road in the U.S. – foreign and domestic. Source: CarMD.com Corp. 2015.*

  
4.6%








**\$423.38**

Average cost to repair a vehicle's check engine light problem in the Western U.S. in 2014.

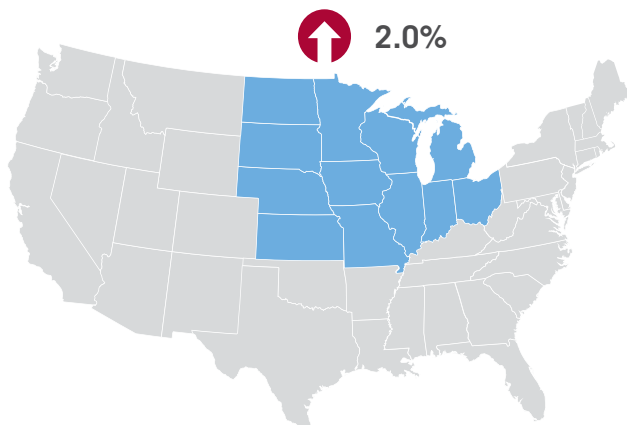


## DETAILED INDEX DATA

### The Top 10 Most Common Check Engine Vehicle Repairs in the Midwestern U.S. – 2014

Rank	Vehicle Repair	Total Average Repair Cost (Parts & Labor)	% 2014 Midwestern U.S. Repairs	Change In Midwestern Rank Since 2013
1	Replace Oxygen Sensor(s) (O2S)	\$246.33	8.14%	No Change
2	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$1,115.05	5.20%	3 - 
3	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.37	4.65%	2 - 
4	Replace Spark Plug Wires and Spark Plugs	\$359.84	3.23%	No Change
5	Replace Wheel Speed Sensor(s)	\$257.75	2.86%	7 - 
6	Replace Mass Air Flow (MAF) Sensor	\$398.28	2.84%	5 - 
7	Replace Ignition Coil(s)	\$245.52	2.83%	6 - 
8	Replace Ignition Coil(s) and Spark Plug(s)	\$444.03	2.70%	No Change
9	Replace Exhaust Gas Recirculation (EGR) Valve and Clean All EGR ports	\$332.20	2.34%	New to Top 10
10	Replace Thermostat	\$203.85	1.88%	New to Top 10

*Top 10 most common vehicle repairs in the Midwestern U.S. are based on 12,500 repairs in 2014 in IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD and WI. This data applies to roughly 85% of cars, light trucks, minivans and SUVs on the road in the U.S. – foreign and domestic. Source: CarMD.com Corp. 2015.*










# \$375.41

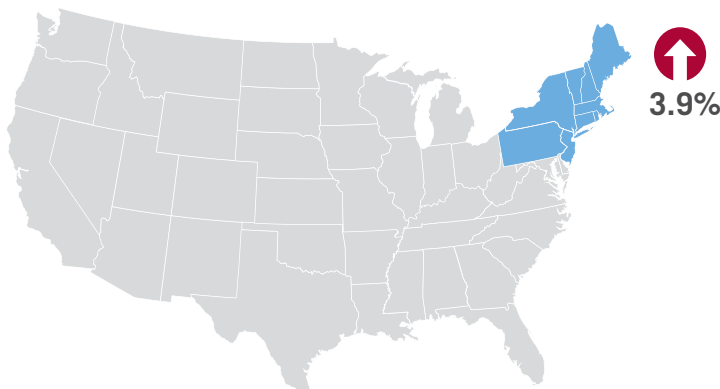
Average cost to repair a vehicle's check engine light problem in the Midwestern U.S. in 2014.

## DETAILED INDEX DATA

### The Top 10 Most Common Check Engine Vehicle Repairs in the Northeastern U.S. – 2014

Rank	Vehicle Repair	Total Average Repair Cost (Parts & Labor)	% 2014 Northeastern U.S. Repairs	Change In NE Rank Since 2013
1	Replace Oxygen Sensor(s) (O2S)	\$263.06	8.52%	No Change
2	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$1,149.01	6.57%	3 - 
3	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.39	4.56%	2 - 
4	Replace Ignition Coil(s)	\$247.25	3.25%	5 - 
5	Replace Ignition Coil(s) and Spark Plug(s)	\$403.91	3.18%	No Change
6	Replace Mass Air Flow (MAF) Sensor	\$405.76	3.11%	4 - 
7	Replace Spark Plug Wires and Spark Plugs	\$366.31	2.76%	6 - 
8	Replace Wheel Speed Sensor(s)	\$229.59	2.62%	9 - 
9	Inspect Battery and Charging System and Repair as Necessary	\$108.86	2.32%	7 - 
10	Replace Exhaust Gas Recirculation (EGR) Valve and Clean All EGR ports	\$342.63	1.96%	No Change

*Top 10 most common vehicle repairs in the Northeastern U.S. are based on 12,261 repairs in 2014 in CT, MA, ME, NH, NJ, NY, PA, RI and VT. This data applies to roughly 85% of cars, light trucks, minivans and SUVs on the road in the U.S. – foreign and domestic. Source: CarMD.com Corp. 2015.*








# \$418.55

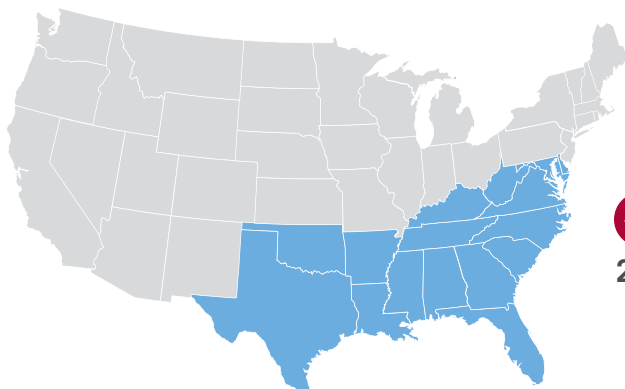
Average cost to repair a vehicle's check engine light problem in the Northeastern U.S. in 2014.

## DETAILED INDEX DATA

### The Top 10 Most Common Check Engine Vehicle Repairs in the Southern U.S. – 2014

Rank	Vehicle Repair	Total Average Repair Cost (Parts & Labor)	% 2014 Southern U.S. Repairs	Change In Southern Rank Since 2013
1	Replace Oxygen Sensor(s) (O2S)	\$259.46	6.81%	No Change
2	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$1,160.82	6.37%	3 - 
3	Replace Ignition Coil(s) and Spark Plug(s)	\$406.79	4.36%	4 - 
4	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.11	4.18%	2 - 
5	Replace Ignition Coil(s)	\$247.36	4.03%	No change
6	Replace Mass Air Flow (MAF) Sensor	\$412.04	3.58%	No change
7	Replace Spark Plug Wires and Spark Plugs	\$363.77	3.46%	5 - 
8	Replace Thermostat	\$212.10	2.48%	9 - 
9	Replace Fuel Injector(s)	\$530.47	1.93%	New to Top 10
10	Replace Exhaust Gas Recirculation (EGR) Valve and Clean All EGR ports	\$350.51	1.91%	No change

*Top 10 most common vehicle repairs in the Southern U.S. are based on 47,555 repairs in 2014 in AL, AR, DC, DE, FL, GA, KY, LA, MD, MS, NC, OK, TN, VA, SC, TX and WV. This data applies to roughly 85% of cars, light trucks, minivans and SUVs on the road in the U.S. – foreign and domestic. Source: CarMD.com Corp. 2015.*



  
2.4%

**\$400.88**

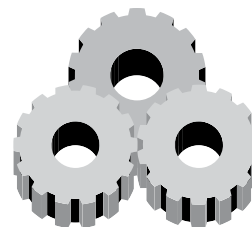
Average cost to repair a vehicle's check engine light problem in the Southern U.S. in 2014.

## MOST/LEAST EXPENSIVE CAR REPAIRS

The **most expensive repair** in the CarMD database in 2014 was “Replace Transmission Assembly” (\$6,400). This repair is indicative of the fact that cars are being made to outlast parts such as their transmission. The good news is that most expensive repairs remain extremely rare in terms of percentage of occurrence. The top **15 most expensive repairs** combined only **account for less than 1% of all repairs** seen by CarMD’s network of thousands of certified technicians last year.

### REPLACE TRANSMISSION ASSEMBLY

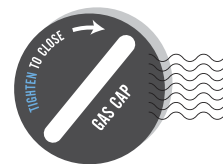
MOST EXPENSIVE REPAIR OF 2014



**\$6,400**

5% of all check engine light-related repairs last year were usually free to fix.

### INSPECT GAS CAP



**FREE**

CarMD found that while some **hybrid repairs have increased, some of the more expensive repairs continue to drop in price as hybrid part availability and technicians trained to service hybrids grow.** “Replace hybrid inverter assembly” has dropped from the no. 11 most expensive repair at roughly \$2,800 to the no. 65 most expensive repair at \$1,357 – a 51% decrease in average repair cost. “Replace hybrid battery,” on the other hand, increased 11% from \$3,140 in 2013 to \$3,479 in 2014.

### HYBRID REPAIR COSTS

HYBRID INVERTER ASSEMBLY REPLACEMENT SINCE 2013



HYBRID BATTERY REPLACEMENT SINCE 2013



## DETAILED INDEX DATA

### The 10 Most Expensive Check Engine-Related Vehicle Repairs in the U.S. – 2014

Rank	Vehicle Repair	Type of Vehicle(s)	Most Expensive Repair Cost (Parts & Labor)
1	Replace Transmission Assembly	Various Vehicles	\$6,400
2	Replace Engine	Various Vehicles	\$5,500
3	Repair Transmission Assembly	Various Vehicles	\$5,400
4	Replace Transmission and Torque Converter	Various Vehicles	\$5,250
5	Replace Transmission Assembly and Reprogram Electronic Control Module (ECM)	Various Vehicles	\$4,700
6	Replace Hybrid Battery and Reprogram Engine Control Module (ECM)	Various Hybrid Vehicles	\$4,140
7	Replace Compuvalve Module	Late '90s Ford F-150 Trucks	\$4,130
8	Replace Engine Block Assembly	2007-20012 Nissan Sentra Vehicles	\$4,060
9	Replace Transmission Assembly	Various Vehicles	\$3,880
10	Replace Transmission Speed Sensor and Reprogram Transmission Control Module (TCM)	2007-2008 Nissan Altima and Sentra Vehicles	\$3,600

Ten most/least expensive repairs are based on 98,051 verified repairs made and input into the CarMD database by the company's team of factory trained repair professionals in 2014. This data is for model year 1996 to 2014 OBD2 cars, light trucks, minivans and SUVs in the U.S. – foreign and domestic. Source: CarMD.com Corp. 2015.

## DETAILED INDEX DATA

### The 10 Least Expensive Check Engine-Related Vehicle Repairs in the U.S. – 2014

Rank	Vehicle Repair	Total Cost (Parts & Labor)
1	Inspect Engine Oil for Correct Level and Viscosity	USUALLY FREE
2	Remove USB Device	USUALLY FREE
3	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	USUALLY FREE
4	Replace Fuel Cap	\$34.07
5	Correct Engine Oil Level	\$79.90
6	Inspect Battery Condition & Charge	\$86.69
7	Correct Engine Coolant Level	\$98.08
8	Reinstall Intake Air Duct	\$108.36
9	Remove Aftermarket Accessories	\$108.36
10	Replace Brake Light Bulb(s)	\$108.36

*Ten most/least expensive repairs are based on 98,051 verified repairs made and input into the CarMD database by the company's team of factory trained repair professionals in 2014. This data is for model year 1996 to 2014 OBD2 cars, light trucks, minivans and SUVs in the U.S. – foreign and domestic. Source: CarMD.com Corp. 2015.*

## INDEX METHODOLOGY

CarMD has compiled the industry's most comprehensive database of OBD2-related problems and associated fixes uploaded by automotive technicians and vehicle owners since 1996. The data for the 2015 CarMD® Vehicle Health Index™ was procured from repairs uploaded to the CarMD diagnostic database from Jan. 1, 2014 to Dec. 31, 2014. This same database is also used to support the consumer automotive tools and Software as a Service (SaaS) products offered by CarMD. [CLICK HERE](#) for a more detailed overview of how CarMD gets its data.

The data was pulled and analyzed between Feb. 21, 2015 and Mar. 11, 2015.

Virtually all makes and models of cars, light trucks, minivans, SUVs and hybrids made since 1996 – foreign and domestic – with on board diagnostic second generation (OBD2) technology are included in the Index. Those makes and models with more registered vehicles on the road may have a larger statistical weighting in the Index findings, as will those vehicles that experience more failures.

The 2015 Index statistically analyzes 90,051 repairs. Each repair has also been reviewed and validated by CarMD's team of ASE-certified Master Technicians and then output based on a probability algorithm that takes into account the vehicle's year, make, model, mileage, postal code, DTCs and similar vehicle problems to produce a most likely repair. Because the data stems from those U.S. vehicle owners and automotive technicians who elected to use the diagnostic devices and/or upload data into the CarMD database; no estimates of theoretical sampling error can be calculated.

All 50 U.S. states, plus the District of Columbia, are represented in this Index. The states with larger registered vehicle populations and participating ASE-certified technicians may have a larger quantity of logged repairs; however, all have been averaged into the overall Index findings. For regional data, CarMD used the U.S. Census Bureau Regions and Division Map to define regions.

Repair costs are based on parts and dealer list plus 10% markup. Labor rates are procured from several sources, including the Undercar Digest National and Regional Hourly Shop Labor Rate reports, as well as the average amount of time required for each repair. Both are updated annually.

CarMD has contracted with an independent consulting company to create and maintain the database for compiling and generating this Index.

On a daily basis, CarMD's nationwide network of thousands of automotive service excellence (ASE)-certified technicians recommend, confirm and upload repairs and costs by region to the CarMD database. As a result, subsequent CarMD Vehicle Health Index reports will draw from an updated sampling of diagnostic trouble codes, expert fixes and repair costs.

### MEDIA CONTACT:

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