

# Roads

2013  
GRADE **D**



## 2013 Report Card for America's Infrastructure Findings

Forty-two percent of America's major urban highways remain congested, costing the economy an estimated \$101 billion in wasted time and fuel annually. While the conditions have improved in the near term, and Federal, state, and local capital investments increased to \$91 billion annually, that level of investment is insufficient and still projected to result in a decline in conditions and performance in the long term. Currently, the Federal Highway Administration estimates that \$170 billion in capital investment would be needed on an annual basis to significantly improve conditions and performance.

### Roads: Conditions & Capacity

The nation's system of roadways serves as a critical link moving people and goods throughout the country. Our road network includes more than 4 million miles of public roadways, carrying almost 3 trillion vehicle miles traveled in 2011 alone. These 4 million miles of roads provide the nation's nearly 11 million trucks with direct access to our ports, rail terminals, and city centers, driving our economy and enabling goods to get to market.

RURAL AND URBAN ROADS IN POOR OR MEDIOCRE CONDITION BY FUNCTIONAL CLASS: 2004–2008

	2004	2005	2006	2007	2008
RURAL: INTERSTATES	12.4%	11.2%	10.0%	9.8%	9.7%
RURAL: OTHER PRINCIPAL ARTERIALS	4.2%	3.6%	3.3%	3.2%	2.9%
RURAL: MINOR ARTERIALS	6.5%	5.4%	5.9%	5.7%	5.7%
RURAL: COLLECTORS	18.8%	18.5%	17.9%	17.8%	17.7%
URBAN: INTERSTATES	24.9%	22.8%	21.5%	21.9%	20.6%
URBAN: OTHER FREEWAYS AND EXPRESSWAYS	9.7%	7.8%	6.5%	7.2%	6.5%
URBAN: OTHER PRINCIPAL ARTERIALS	27.8%	27.4%	25.6%	26.9%	26.8%
URBAN: MINOR ARTERIALS	28.8%	27.5%	26.9%	27.9%	27.2%
URBAN: COLLECTORS	34.8%	33.5%	34.9%	36.4%	35.2%

U.S. Department of Transportation, Federal Highway Administration, Highway Statistics (Washington, DC: Annual Issues), tables HM-63 and HM-64 as reported in U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, National Transportation Statistics, table 1-26, available at [http://www.bts.gov/publications/national\\_transportation\\_statistics/](http://www.bts.gov/publications/national_transportation_statistics/) as of October 2010.

Currently, 32% of America's major roads are in poor or mediocre condition, costing U.S. motorists who are traveling on deficient pavement \$67 billion a year, or \$324 per motorist, in additional repairs and operating costs. While the nation has seen some improvements in pavement conditions due to a short surge of investment from the American Recovery and Reinvestment Act, these were not sustained, long-term investments. Of added

concern are the vehicular restrictions for some roadways due to poor pavement, which can create longer routings for trucks in cases where detours are required. Deficient pavements are more common in urban versus rural areas, with 47% of urban interstate vehicle miles traveled (VMT) over deficient pavements compared to 15% of rural interstates. The ultimate cost of poor road conditions is significantly more over time than the cost to maintain those same roads in good condition. For example, after 25 years the cost per lane mile for reconstruction can be more than three times the cost of preservation treatments over the same time period, which can lead to a longer overall life span for the infrastructure.

Additionally, current estimates show that 42% of America's major urban highways are congested, down from 45% in 2008. While Americans still wasted 1.9 billion gallons of gasoline and an average of 34 hours in 2010 due to congestion, costing the U.S. economy \$101 billion in wasted fuel, the average cost per motorist has only increased by \$3 over the past four years. A major part of the problem is that VMT on America's highways increased by 39% between 1990 and 2009, so people are driving longer distances on average. However, newly constructed road mileage has only increased by 4% during that same time. While VMT has been decreasing over the last few years due to continued congestion and the recession, the trend is not likely to continue over a long period of time.

In many cases, our nation's roadways can benefit from significant performance improvements without adding new highway lanes. Adverse community impacts such as induced sprawl, difficulties in obtaining needed right of way, and the expense of adding capacity to highway infrastructure, suggest that every effort must be made to better manage the current roadway network. Cities and states across the country are increasingly using technology to reduce congestion and improve traffic flow, including wider use of performance pricing, variable speed limits, and more efficient signal timing. Convenient and accessible alternative modes of transportation, as well as an increased use of telecommuting, are other examples of how the demand for capacity increases and greater improvement can be better managed.

Safety also continues to be a major focus for investment. Statistics indicate that roadway conditions are a significant factor in approximately one-third of all U.S. traffic fatalities. Roadway fatalities have been on the decline annually, totaling 32,885 fatalities in 2010, or a drop of nearly 24% since 2005.

TOP 20 FREIGHT BOTTLENECKS IN THE U.S., 2010

LOCATION	CONGESTION RANKING	AVERAGE SPEED (MPH)
CHICAGO, IL: I-290 AT I-90/I-94	1	29
FORT LEE, NJ: I-95 AT SR 4	2	29
HOUSTON, TX: I-45 AT US 59	3	39
HOUSTON, TX: I-10 AT I-45	4	41
HOUSTON, TX: I-10 AT US 59	5	41
GARY, IN: I-65 AT I-80	6	47
AUSTIN, TX: I-35	7	35
CHICAGO, IL: I-90 AT I-94 (NORTH)	8	35
ATLANTA, GA: I-285 AT I-85 (NORTH)	9	46
LOS ANGELES, CA: SR 60 AT SR 57	10	46
MINNEAPOLIS - ST. PAUL, MN: I-35W AT I-494	11	45
HOUSTON, TX: I-610 AT US 290	12	45
DALLAS, TX: I-45 AT I-30	13	41
HOUSTON, TX: I-45 AT I-610 (NORTH)	14	46
CINCINNATI, OH: I-71 AT I-75	15	47
DENVER, CO: I-70 AT I-25	16	44
BUFFALO-NIAGARA FALLS, NY: I-90 AT I-290	17	42
HARTFORD, CT: I-84 AT I-91	18	47
LOUISVILLE, KY: I-65 AT I-64/I-71	19	45
ATLANTA, GA: I-75 AT I-285 (NORTH)	20	49

Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Performance Measurement Program, special tabulation, 2011.

AVERAGE ANNUAL CAPITAL INVESTMENT LEVELS FOR ROAD AND BRIDGE INVESTMENT SCENARIOS UNTIL 2028

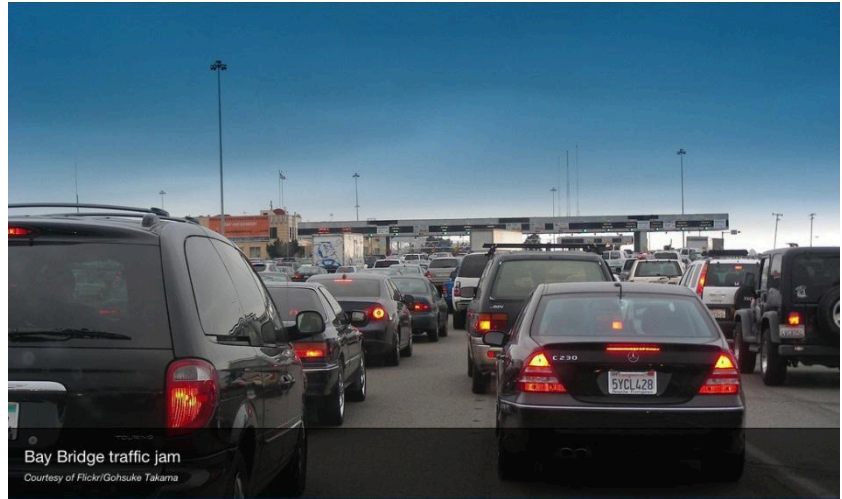
SYSTEM	SUSTAIN CURRENT SPENDING	MAINTAIN CURRENT CONDITIONS AND PERFORMANCE	IMPROVE CURRENT CONDITIONS AND PERFORMANCE
INTERSTATE	\$20 BILLION	\$24.3 BILLION	\$43 BILLION
NATIONAL HIGHWAY SYSTEM	\$42 BILLION	\$38.9 BILLION	\$71.8 BILLION
FEDERAL AID HIGHWAYS	\$70.6 BILLION	\$80.1 BILLION	\$134.9 BILLION
ALL ROADS AND BRIDGES	\$91.1 BILLION	\$101 BILLION	\$170.1 BILLION

Source: Information from the 2010 FHWA Conditions and Performance Report

Nevertheless, these crashes cost the U.S. economy \$230 billion each year. Reducing exposure to obstructions, adding or improving median barrier systems, and widening lanes and shoulders offer opportunities to reduce crashes, injuries, and fatalities. The 2012 surface transportation bill nearly doubles funding for the Highway Safety Improvement Program.

## *Roads: Investment & Funding*

In 2010, it was estimated that deficiencies in America's surface transportation systems cost households and businesses nearly \$130 billion. However, the Federal Highway Trust Fund (HTF), which contributes the bulk of federal funding for transportation, is on a path to bankruptcy as it relies on dwindling gas tax revenues. The gas tax has remained the same since 1993, and revenues are decreasing further due to more efficient vehicles. The Congressional Budget Office sees the crisis worsening when considering newly proposed fuel economy standards that will lower fuel tax revenues by an additional 21% by 2040. Such a decrease would result in a \$57 billion drop in the Highway Trust Fund between 2012 and 2022.



Estimates state that to maintain all of the nation's highways at their current condition would cost \$101 billion in annual capital investment between 2008 and 2028. In order to improve the nation's highways, investment would need to rise to \$170 billion annually, or an additional \$79 billion annually from current investments, during that same time period. Of that \$170 billion, \$85 billion would need to be directed toward improving the physical condition of existing assets in order to achieve the Department of Transportation's State of Good Repair benchmark. This investment would bring the number of federal-aid highway vehicle miles traveled on pavements with a good ride quality up from 46% in 2008 to 74% by 2028.

Unfortunately, federal, state, and local governments are only spending \$91 billion annually on capital investments, meaning that each year our roads deteriorate further. If present trends continue, the unfunded gap in highway funding, which is 48% of the total need in 2010, is expected to increase to 54% by 2040.

Other studies have also concluded that the current investment level is insufficient. The National Surface Transportation Infrastructure Financing Commission estimates that to maintain the nation's highways, an annual investment of \$131 billion is needed from 2008 to 2035, in 2008 dollars. In order to improve the nation's highways, the annual investment between 2008 and 2035 climbs to \$165 billion each year, in 2008 dollars.

Reliable revenue sources must be identified in order to increase investments in our nation's highway network. Federal transportation loan programs and innovative financing mechanisms play a critical role in funding the nation's highways, but these programs cannot replace dedicated federal revenue.

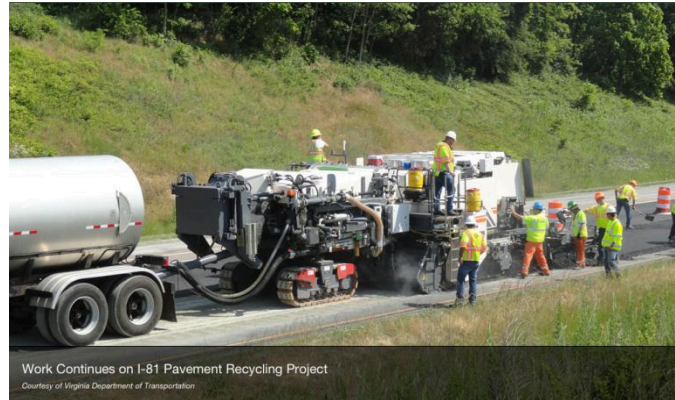
## Roads: Success Stories

### I-81 In-Place Pavement Recycling Project

Combining cold in-place recycling, cold central-plant recycling, and full-depth reclamation made a 3.7 mile section of Virginia's I-81 the first highway reconstruction project in the United States to use all three environmentally sustainable methods together. The rehabilitated section of pavement was 43 years old, well past its intended design life, and had seen heavier volumes of truck traffic than it had originally been engineered for.

The \$10.1 million project reused existing materials from the underlying road structure, while the driving surface received a new overlay of asphalt. The road construction method was not only environmentally sustainable — it reduced construction time by about two-thirds and saved the Commonwealth of Virginia millions, compared to the cost of conventional reconstruction. Traditional pavement construction would have required building another travel lane and would have taken one to two years to complete. By using in-place recycling, the project time was cut to seven months, resulting in significant cost savings, and reduced traffic disruptions.

By recycling pavement on-site, truck usage to haul in materials was minimized, greatly reducing fuel consumption. Additionally, the reliance on a novel traffic-management plan kept other vehicles moving through, and around, the interstate work zone without a major incident.

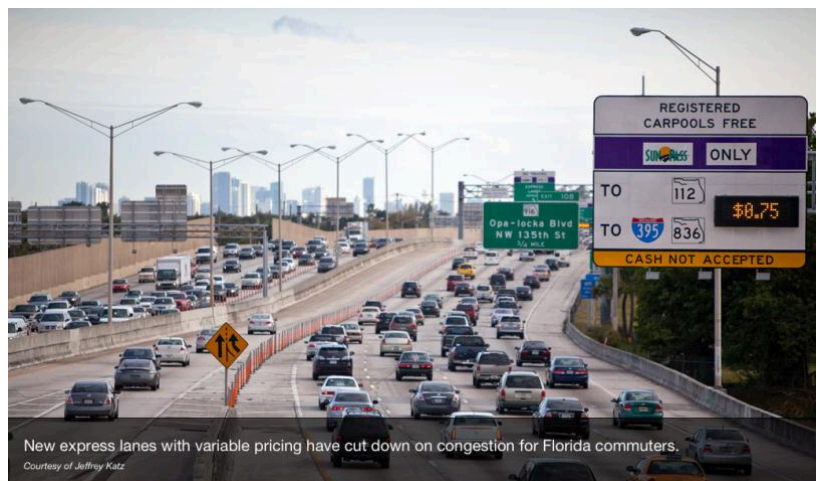


Work Continues on I-81 Pavement Recycling Project  
Courtesy of Virginia Department of Transportation



### Going from HOV to HOT Moves Miami Faster

Traffic congestion in south Florida is a chronic and severe problem, with Miami consistently ranked among the most congested urban areas in the United States. In 2007, peak hour speed along the I-95 corridor was less than 17 miles per hour in the general use lanes and 31 miles per hour in the high-occupancy vehicle (HOV) lanes. With significant long-term population growth projected in southeast Florida, volumes on I-95 are expected to increase

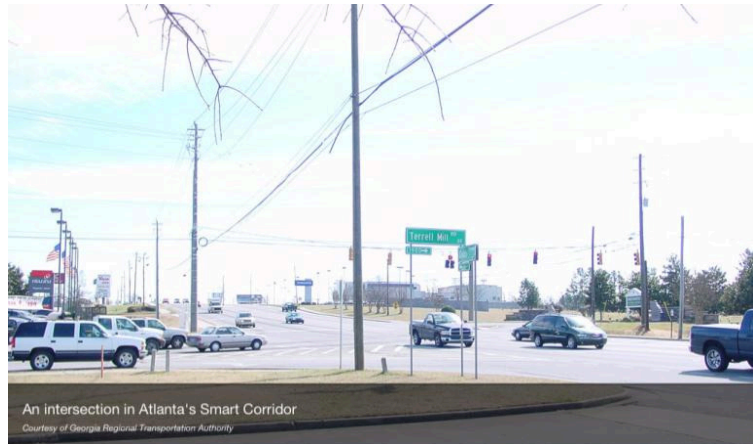


New express lanes with variable pricing have cut down on congestion for Florida commuters.  
Courtesy of Jeffrey Katz

more than 20 percent over the next 20 years.

In order to combat this chronic congestion, the Miami-Area Urban Partnership was awarded an Urban Partnership Agreement (UPA) grant to implement a managed lanes project on I-95 using the existing roadway.

The first phase of the [95 Express](#) project reconfigured I-95 from I-395 to the Golden Glades Interchange in Miami, and created variable-priced tolls that adjust to congestion levels. Two new lanes were combined with existing HOV lanes to create two high-occupancy toll (HOT) lanes, which have variable congestion pricing to maintain a minimum targeted speed of 45 miles per hour. Motorcycles and registered hybrid vehicles can enjoy toll-free travel, therefore encouraging more environmentally conscious options.



An intersection in Atlanta's Smart Corridor  
Courtesy of Georgia Regional Transportation Authority

The first phase of 95 Express was completed in April 2010, and since that time, travel speeds tripled in the lanes that were converted from traditional HOV lanes to variable-toll express lanes. General purpose lanes have also significantly benefited from increased travel speeds, and express buses operating in the I-95 Express lanes now enjoy faster and more reliable trips in and out of downtown Miami, which has led to increases in ridership. The tolled roadway is now bringing in approximately \$1.3 million monthly.

## Atlanta Smart Corridor

Implementing ITS technology in 29 intersections along an 8.2 mile stretch of highway in the Atlanta area saved \$5.9 million annually due to reduced vehicle travel times and a 34 percent reduction in fuel consumption since the project was completed in June 2010.

The installation of SCATS (Sydney Coordinated Adaptive Traffic System), transit signal priority, and intersection improvements allowed for smart signal control that uses real-time vehicle counts obtained from sensors to determine the most appropriate cycle time and optimized splits for every intersection approach. The Georgia Regional Transportation Authority partnered with the city of Atlanta, Cobb County, the city of Marietta, Georgia DOT, and the Federal Highway Administration to create the Atlanta Smart Corridor (ASC) project.

## Roads: Conclusion

Current investment trends are doing little to improve roadway conditions and may result in a decrease of conditions and performance. With each passing year the economic cost of underfunding maintenance and repair produces a mounting burden on our economy and increases costs to make improvements. While



Traffic on 2nd Avenue in Seattle, WA after a Seahawks game.  
Courtesy of Flickr/Oran Vignery

conditions have improved slightly, federal, state, and local governments, as well as the private sector, must work to develop sustainable and reliable revenue sources for our road network. The nation can no longer rely solely on the fuel tax to generate the necessary future revenues for the Highway Trust Fund.

## Raising the Grades: Solutions that Work Now

- **Develop performance-based investment strategies** which will ensure that available resources are directed to those projects with the highest performance return on investment
- **Optimize usage of existing highway capacity** to ensure the best use of available funding
- **Encourage the use of asset management programs** to provide for the most efficient use of maintenance and repair investment
- **Use freight movement efficiency** as a measure of the overall surface transportation system's performance and contribution to economic strength
- **Increase investment from all levels of government and the private sector**, to repair and improve the nation's highway systems
- **Ensure the sustained sufficiency and reliability of the Highway Trust Fund** by identifying and incorporating necessary additional revenue streams
- **Continue the Highway Safety Improvement Program successes** by investing in projects that will reduce injuries and fatalities



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