for. His ability to make others laugh cannot be overstated! He has certainly had a lasting impact on those with whom he has worked over the years, and his cordial demeanor and welcoming smile will be missed in the Halls of the Capitol complex.

On a personal note, Tucker and his wife Kristine recently welcomed their first child, Tucker, Jr., into the world in August. I am sure that Tucker will be a great father, and look forward to hearing about the Shumack family's adventures throughout the years.

Tucker's departure from the Small Business Committee is a true loss. I owe Tucker a debt of gratitude for his phenomenal work on behalf of the American people. I am confidant that he will quickly become a well-liked and respected member of his new office. I speak for my entire staff when I wish Tucker well in his new job, and in all his future endeavors.

GOVERNMENT ACCOUNTABILITY OFFICE ANALYSIS

Mr. WARNER. Madam President, earlier this summer, when gasoline prices were topping $4 a gallon, I asked the GAO to analyze potential savings from the establishment of a national speed limit. I did not prescribe what that speed limit should be, merely asked the GAO to conduct an analysis at which speeds vehicles were most fuel efficient and make a determination as to whether a national speed limit would have positive impacts on the conservation of gasoline.

My interest in this approach to gas conservation was spurred by a desire for a measure that would provide immediate relief to the overstretched budgets of households across America. I was also dusting off a solution used in the past, specifically, the number of barrels of oil saved when a national speed limit was imposed in 1974 in response to the Arab oil embargo.

Last week, I was pleased to meet with the GAO and hear their findings on the relationship between vehicular speed and fuel economy as well as how reducing the speed limit might affect fuel use and perhaps cost.

While the days of my service in the U.S. Senate are numbered, it is my hope that these findings by the GAO can serve as a useful tool to my colleagues who will return in the next Congress, as I know the interlinked issues of energy, transportation, and climate change are going to remain the focus of much debate and policy making in the coming years.

Mr. President, I thank the GAO for its work, and I ask unanimous consent that GAO analysis be printed in the RECORD.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

Energy Efficiency: Potential Fuel Savings Generated by a National Speed Limit Would Be Influenced by Many Other Factors

In response to Senator Warner's interest in obtaining information on the possibility of using a national speed limit to reduce fuel consumption, the Government Accountability Office reviewed existing literature and consulted knowledgeable stakeholders on the following:

What is the relationship between speed and the fuel economy of vehicles?

How might reducing the speed limit affect fuel use?

Due to a limited time frame of two months to complete the work, to address these objectives, we limited our analyses to light-duty vehicles, such as cars, sport utility vehicles, and pickup trucks and relied on the expertise of GAO and knowledgeable stakeholders to identify the most relevant economic and transportation literature. We provided a draft to the three agencies whose officials we consulted for our analyses—the Environmental Protection Agency (EPA), the Department of Energy (DOE), and the Department of Transportation (DOT)—and incorporated relevant technical comments. We did not examine other aspects of implementing a national speed limit, such as potential safety impacts. In summary, we found the following.

According to Literature and Stakeholders, Reducing a Vehicle's Speed Can Potentially Increase Its Fuel Economy, Depending on the Vehicle's Characteristics

For a vehicle traveling at high speed, reducing its speed increases fuel economy. In general, at speeds over approximately 35 to 45 mph, if a vehicle reduces its speed by 5 mph, its fuel economy can increase by about 5 to 10 percent, because air resistance, or drag, increases exponentially as a vehicle goes faster. Conversely, air resistance diminishes more rapidly as a vehicle slows down, thus increasing its fuel economy.

According to existing literature and knowledgeable stakeholders, there is no single speed that optimizes fuel economy for all vehicles. Optimal speed for fuel economy for individual vehicles ranges widely, but is generally between 30 and 60 mph, depending on a vehicle's characteristics. For example, according to the most recent published data—a 1997 study by Oak Ridge National Laboratory, commissioned by the Federal Highway Administration (FHWA), that examined fuel economy at different speeds for nine automobiles and light trucks from model years 1988 through 1997—the optimal fuel economy for a 1994 Jeep Grand Cherokee, a sport-utility vehicle, would be about 26 miles per gallon at a steady 40 mph. In contrast, in a 2008 internal study by the Argonne National Laboratory for the Department of Energy (DOE), examining four vehicles, the optimal fuel economy for a 2005 Toyota Echo, a subcompact car, is about 69 miles per gallon, achieved when traveling at a steady 30 mph.

However, a vehicle's fuel economy also depends on other factors besides air resistance. Factors that enhance fuel economy include engine efficiency enhancements (e.g., fuel injection), electronic and computer controls, more efficient transmissions, and hybrid technology. However, other factors, such as increased vehicle weight, decrease fuel economy.

In general, over the last 2 decades, fuel economy gains resulting from advances in automotive technologies have largely been offset by increases in vehicle weight, performance, and accessory loads. Specifically, vehicles are heavier than in the past, because they are larger and include more technologies. For example, average vehicle weight has increased from 3,220 pounds in 1987 to 4,117 in 2008, according to the Environmental Protection Agency (EPA). In addition, trends show that recent vehicles, on average, have bigger, more powerful engines that yield better performance—i.e., acceleration and greater speed—at the expense of fuel economy. For example, according to the same EPA report, average horsepower has increased from 118 to 222 over the same period. Further, increased accessory loads, such as air conditioning and electronics, have also reduced fuel economy. According to EPA, from 1987 through 2004, on a fleetwide basis, technology innovation was utilized exclusively to support market-driven attributes other than fuel economy, such as performance. Beginning in 2005, however, according to EPA's analysis of fuel economy trends, technology has been used to increase both performance and fuel economy, while keeping vehicle weight relatively constant.

According to Literature and Stakeholders, a Reduced Speed Limit Is Only One of Many Factors That Could Affect Total Fuel Use

Lowering speed limits can potentially reduce total fuel consumption. According to literature we reviewed examining the impact of the national speed limit enacted in 1974, the estimated fuel savings resulting from the 55 mph national speed limit ranged from 0.2 to 3 percent of annual gasoline consumption. According to DOE's 2008 estimate, a national speed limit of 55 mph could yield possible savings of 175,000 to 275,000 barrels of oil per day. This range is consistent with estimates of the impact of the past national speed limit. According to the Energy Information Administration, total U.S. consumption of petroleum for 2007 was about 21 million barrels of oil per day.

However, other factors, including drivers' compliance with a reduced speed limit, would affect the actual impact of a lower speed limit on the amount of fuel savings. Reducing the speed limit does not necessarily mean that drivers will comply. In fact, in 1975, under the previous national speed limit, about half of the states reported more drivers exceeding the national speed limit of 55 mph than complying with it. States may vary in their ability to enforce the reduced speed limit, in part due to cost and limited resources, affecting driver compliance. Moreover, a national speed limit would not affect many of the miles driven in the United States, such as those in urban areas, where most vehicles are already traveling at lower speeds due to lower speed limits or congestion. According to FHWA, fewer than one quarter of the vehicle miles traveled (VMT) in the United States would likely be directly affected by a changed speed limit. In addition, congestion forces some vehicles to travel slowly, no matter what the speed limit, meaning a reduction would have little or no impact on fuel consumed on congested roads.

Other external conditions also affect fuel economy, such as road conditions, including whether a road is steep or flat, and weather conditions, including wind speed and direction. Finally, other aspects of driver behavior may also affect fuel consumption. For example, driver behavior may be affected by fuel prices. Higher prices may cause people to drive less or purchase more fuel-efficient vehicles. Similarly, driving at a consistent speed can reduce fuel consumption. In contrast, aggressive driving such as accelerating or stopping quickly can increase fuel consumption. In addition, proper vehicle maintenance—including regularly changing automobile fluids and filters and properly inflating tires—improves fuel economy.

The speed limit is only one tool among many for potentially conserving fuel. Certain realities such as congestion on our nation's roads, how people drive and maintain their vehicles, and emerging technologies are other potential considerations as the nation looks for options to conserve fuel.