

**Testimony before a Joint Meeting of the Senate Finance Committee and the Senate
Transportation and Homeland Security Committee**

by
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Mr. Chairman and members of the committee, my name is David Ellis. I am a research scientist at the Texas Transportation Institute, a part of Texas A&M University System in College Station, Texas.

I was asked to testify here today on several topics, including the projected population of the state of Texas, its effect on vehicle miles traveled, projected fuel efficiencies, their impact on fuel tax revenues, and construction commodity prices. I will do my best to squeeze all of that into three minutes.

With respect to population, as shown in Exhibit 1, it is expected that Texas will continue to grow from about 26 million residents currently to about 37 million residents by the year 2030. That projection assumes that we continue migration rates similar to those estimated for the period 2000 through 2007. If, in fact, we experience migration rates similar to those that we experienced from 1990 to 2000, the State's population could increase to over 41 million. For the purpose of this discussion, I will assume the baseline growth assumption of 37 million Texans by 2030. However, whatever the future holds in terms of an exact number, more people means more vehicles and more vehicle miles traveled.

Exhibit 1: Projected Texas Population

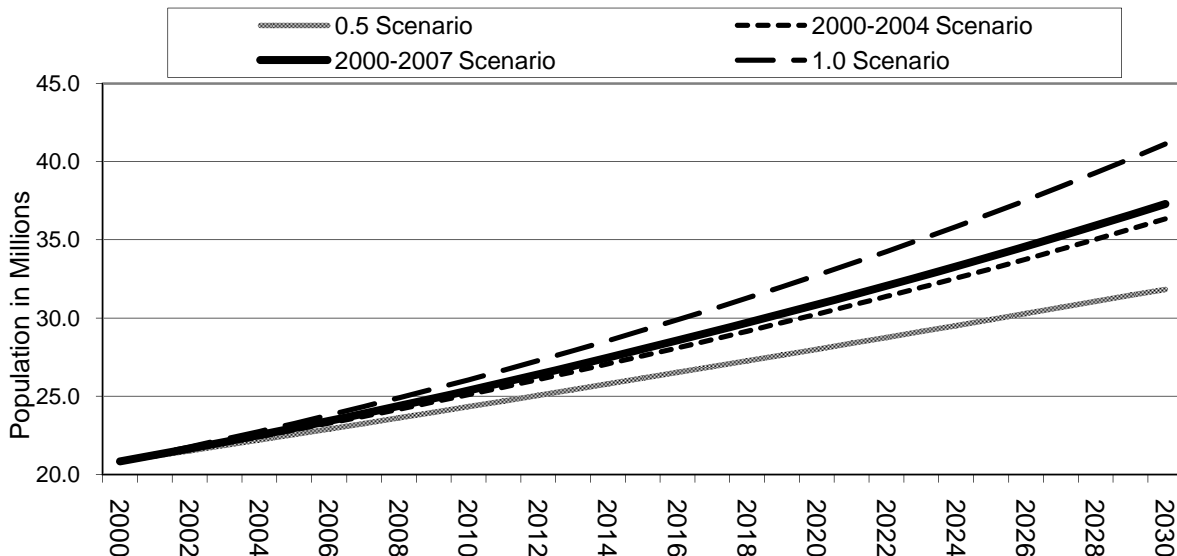
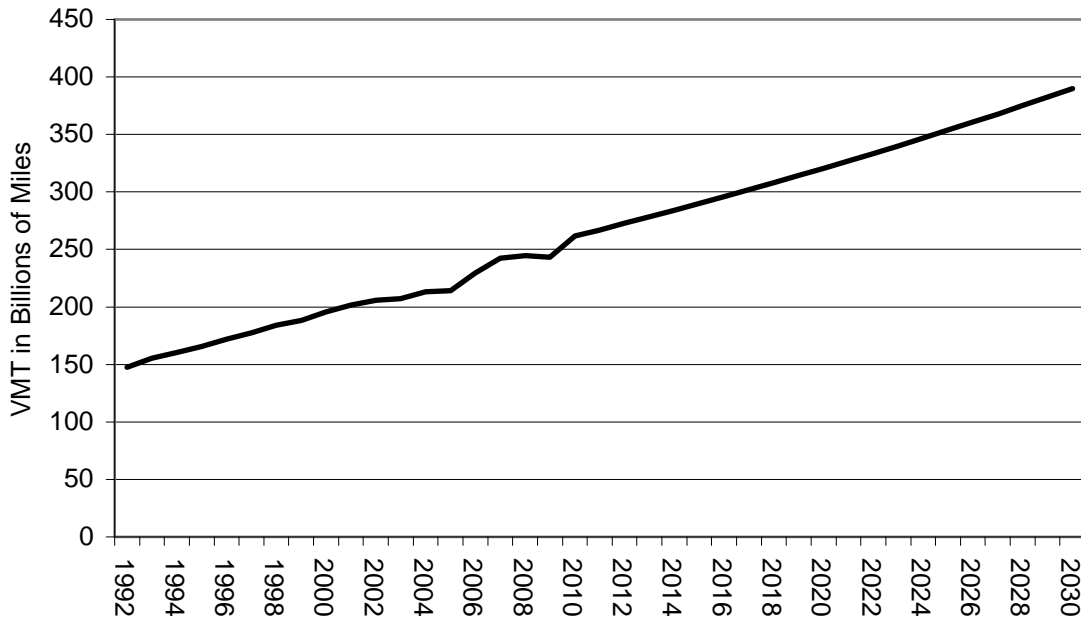


Exhibit 2 illustrates a projection of VMT in Texas through the year 2030. This includes VMT on all roads and streets in Texas, not just state-maintained roads. By the year 2030 we might expect just shy of 400 billion miles traveled per year in Texas, up from a little over 250 billion miles traveled currently. VMT is important because, of course, it represents demand on the roadway system of the state.

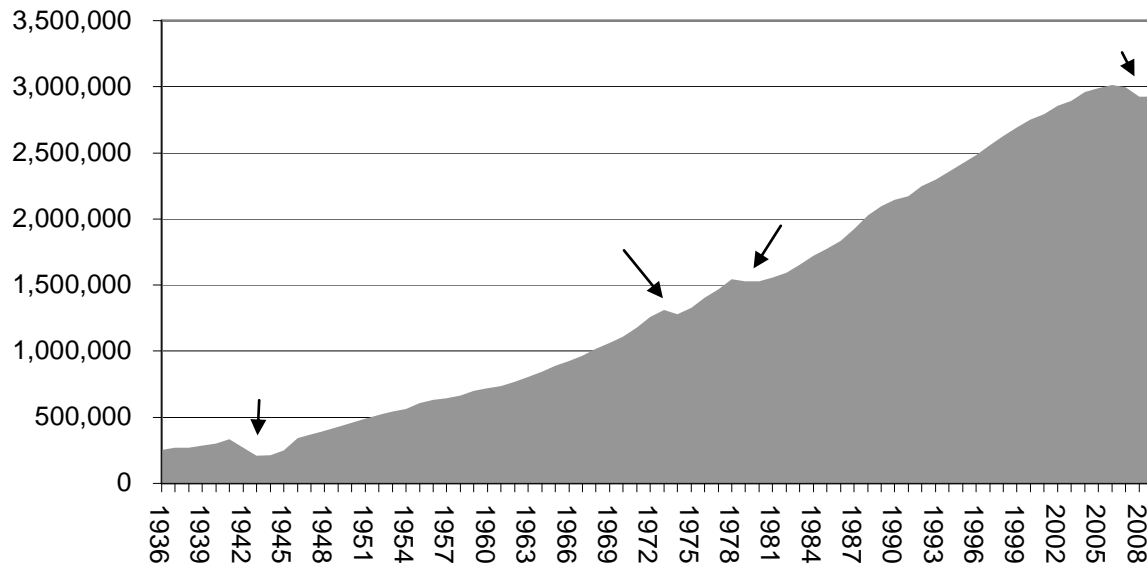
Exhibit 2: Estimated Total VMT in Texas



I've included Exhibit 3, because I think it contains some potentially important historical lessons. When we experienced a rapid run-up in the price of oil, and consequently the price of gasoline and diesel fuel, in 2008 there was a great deal of discussion, not only in the national media but also in some academic circles, that VMT in the United States had peaked, and we would never again return to anything like our historical annual rate of increase in VMT. History might lead us to believe otherwise. As you can see in Exhibit 3, there have been other periods in our history when we have experienced decreases in vehicle miles traveled. We saw this occur in World War II, of course, with the rationing of fuel, rubber and other items essential to transportation. We also experienced a decline in VMT in the early 1970s, corresponding to a rapid increase in fuel price. Another decrease in VMT occurred in the late 70s and early 1980s corresponding once again to a rapid increase in the price of oil which caused an increase in the price of gasoline. Both of these periods were similar to what we experienced in 2008, and to some degree, in 2009. I think it is significant to note that after each one of these prior decreases, eventually the positive slope of the line returned, essentially to what it was prior to the decrease in VMT.

Exhibit 3: VMT in the United States (in millions): 1936 through 2009

(Source: Federal Highway Administration)



I'm not very good at predicting the future. But, I do think there is much to be learned from the past. As a result, it seems reasonable to me to conclude that definitive statements on the demise of our historical rates of growth in VMT may be somewhat premature.

If we look at transportation in an economic sense, both population and VMT represent the demand side of the equation. The other issue at play here, because we derive so much of our transportation-related revenue from the fuel consumed in travel, is the average fuel efficiency we achieve in driving those hundreds of billions of miles each year.

As can be seen in Exhibit 4, from 1991 through 2005 the average fuel efficiency of gasoline powered vehicles in Texas remained fairly steady, and even, for short periods of time, actually decreased as the percentage of SUVs and other similar vehicles increased as a percentage of the total vehicle fleet in the state. Then, in 2006 through the present we have seen fairly substantial increases in fuel efficiency. While this is a desirable goal from a national energy policy standpoint, it can, and likely will have, significant impacts on the fuel tax revenue stream.

Exhibit 4: Estimated Fleetwide Fuel Efficiency of Gasoline Powered Vehicles in Texas

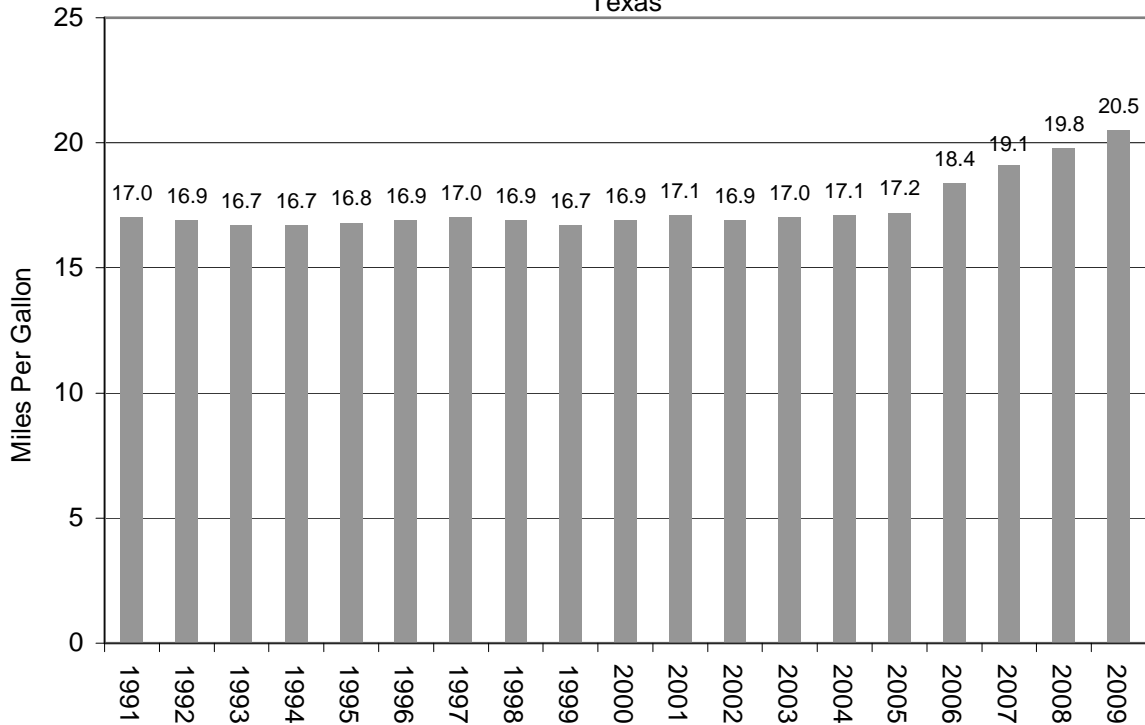


Exhibit 5 shows a set of projections developed by Cambridge Systematics and then adapted to fit the Texas vehicle fleet by TTI. As you can see, there are three alternative fuel efficiencies for personal vehicles. All three scenarios assume two primary differences. The first difference is the assumption regarding improvement in fuel efficiency of traditional internal combustion engines. The second, and most important assumption, relates to market penetration of hybrid and alternative fuel vehicles. For the remainder of my remarks here today all of the projections assume the “Average” fuel efficiency scenario for personal vehicles shown in exhibit 5. Exhibit 6 relates to commercial vehicles and addresses the same two fundamental assumptions.

Exhibit 5: Projected Average Fleet-Wide Fuel Efficiency for Personal Vehicles

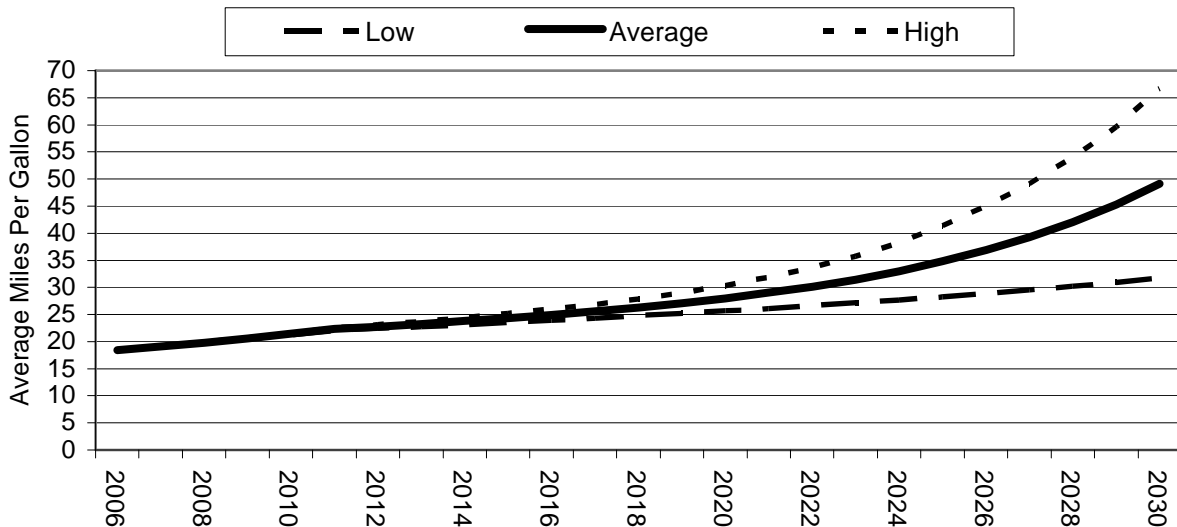


Exhibit 6: Projected Average Fleet-Wide Fuel Efficiency for Commercial Vehicles

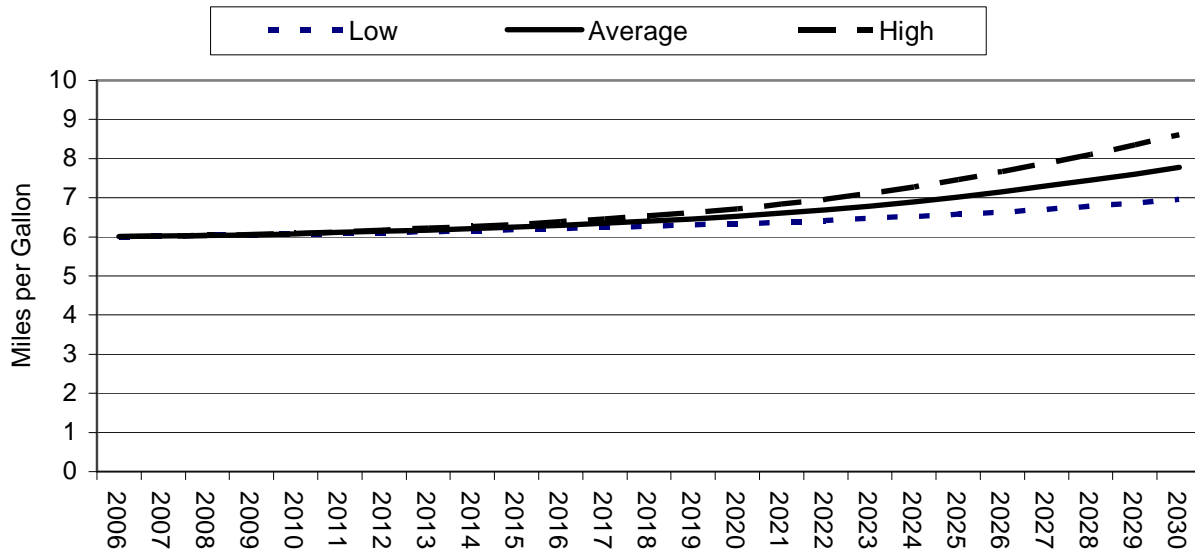


Exhibit 7 takes the historical fuel efficiency data shown in Exhibit 3 and translates it into actual fuel consumption based on a vehicle driving 12,000 miles per year. What you can see is the effect of fuel efficiency on fuel consumption. In other words, a vehicle driving 12,000 miles per year in the 1990s would use a little over 700 gallons of gasoline annually. However, by 2009, a more fuel-efficient vehicle would consume only 585 gallons of gasoline driving the same 12,000 miles. While, once again, this a laudable achievement from a national energy policy point of view, it nevertheless has revenue implications.

Exhibit 7: Gallons of Gasoline Consumed Driving 12,000 Miles Per Year

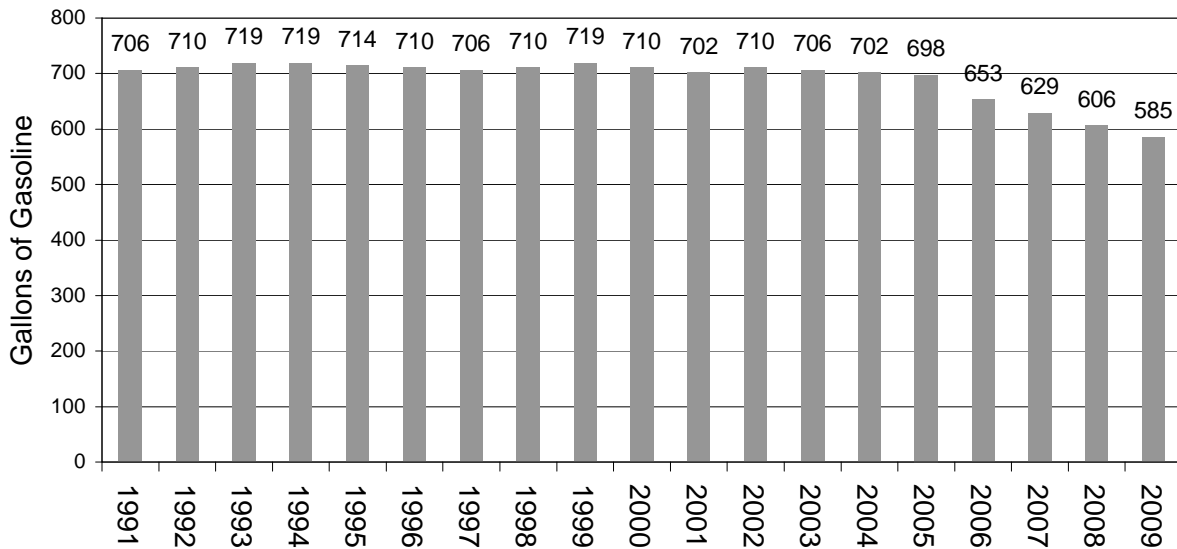


Exhibit 8 and 9 showed the long-term revenue implications of projected increases in fuel efficiency for both gasoline and diesel fuel vehicles. Exhibit 7 shows the effect on total gasoline and diesel fuel tax revenues. Exhibit 8 shows that same effect, this time relative to net fuel tax

revenues net to the Texas Department of Transportation. As you can see, after being essentially flat, fuel tax revenues peak in the 2016 to 2018 period and then began a slow, gradual decline.

Exhibit 8: Estimated Total Gasoline and Diesel Fuel Tax Revenues

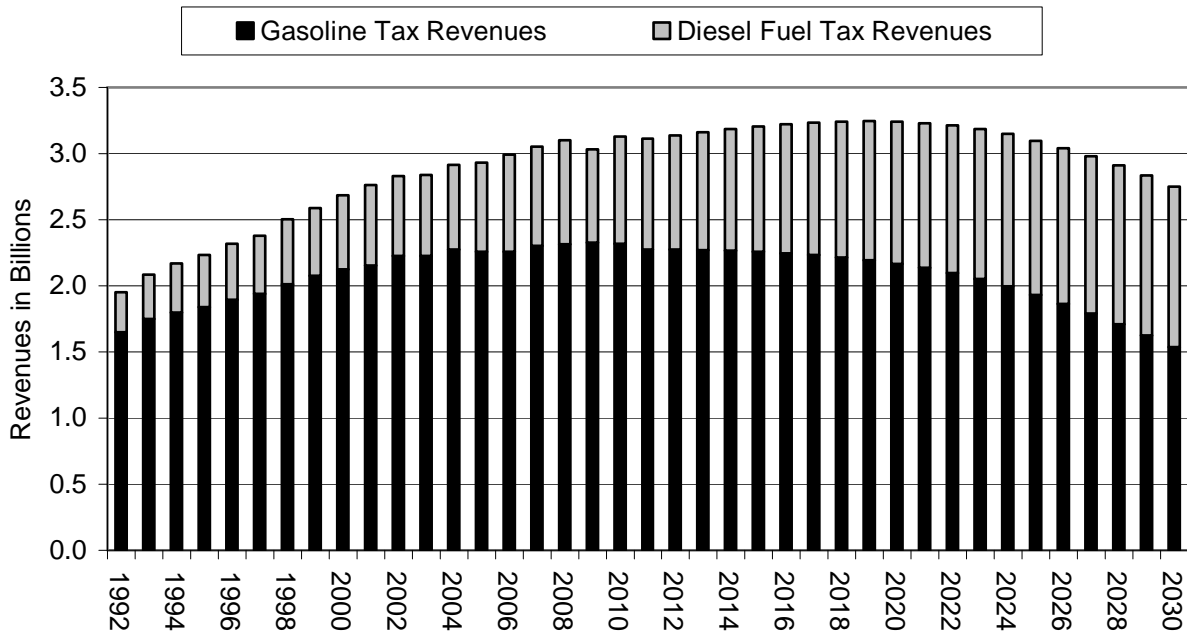
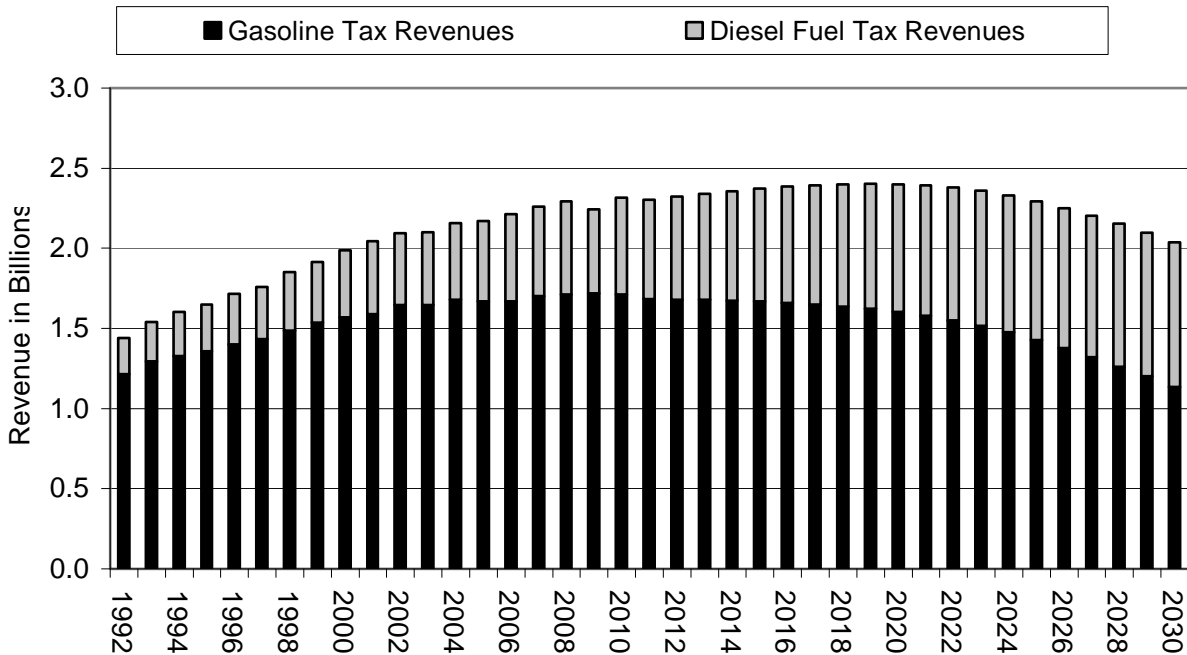


Exhibit 9: Estimated Gasoline and Diesel Fuel Tax Revenues Net to TxDOT

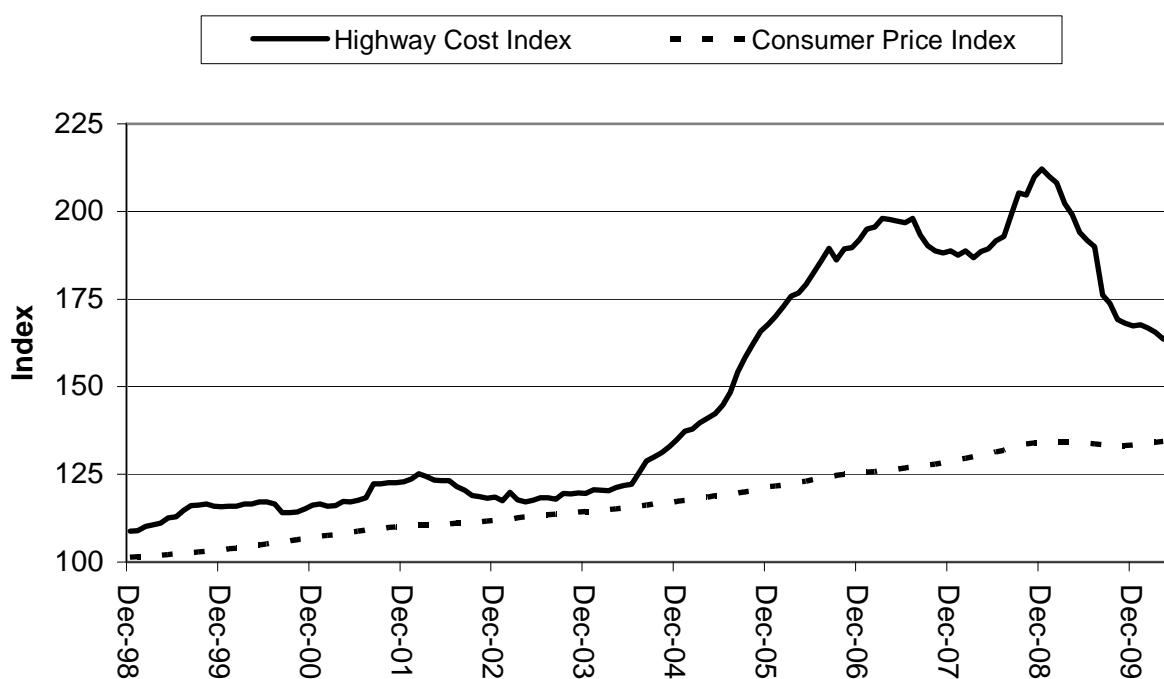


Taking these first nine exhibits together, we have an increase in population and an increase in VMT, both of which cause an increase on the demand side of our transportation system. However, the primary revenue source upon which we rely to address the supply side of the transportation equation begins to actually diminish in real terms.

To help give you an idea of what this means, because of expected improvements in fuel efficiency between now and 2030, the state will realize about \$18 billion less in fuel tax revenue than would be the case if fuel efficiency stayed as it is today. That means approximately \$13 billion less for transportation infrastructure and \$4.5 billion less for public education. Again, using less fuel is a positive outcome relative to our dependence on fossil fuels, but it is also an outcome with significant fiscal implications for the state.

As I mentioned, I was also asked to address construction commodity prices. Exhibit 10 shows a 12-month moving average for both the Texas Highway Cost Index and the Consumer Price Index. Both values are indexed such that 1997 equals 100.

Exhibit 10: 12-Month Moving Average for Texas Highway Cost Index and National Consumer Priced Index (1997=100)

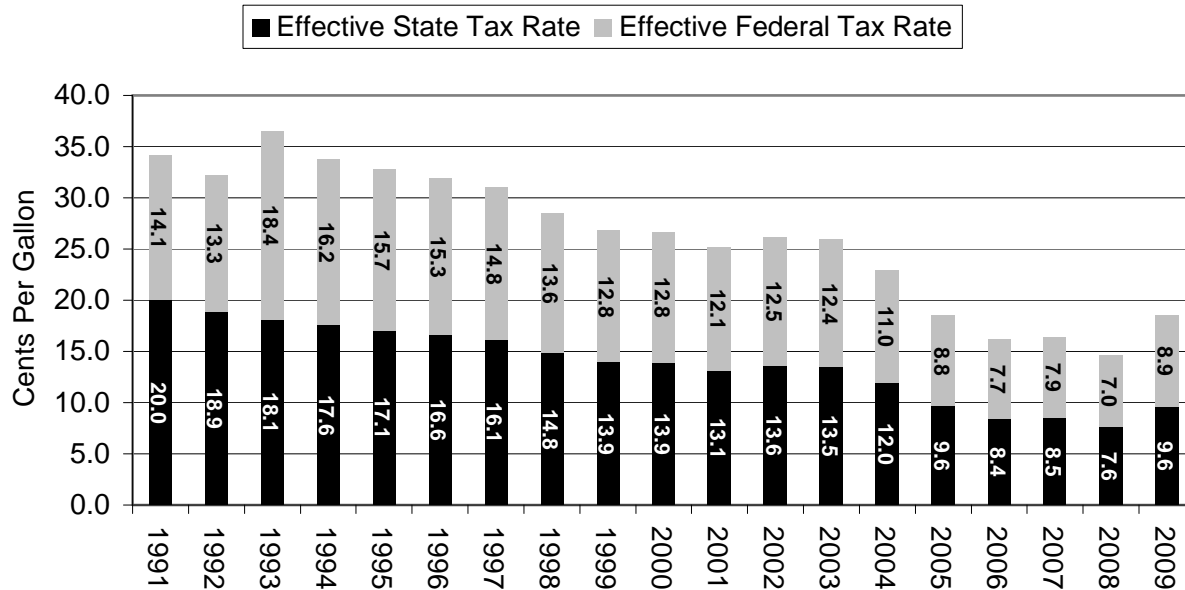


As you can see, from the end of 1998 through the middle of 2004 the Highway Cost Index and the CPI moved relatively in tandem. Then, beginning in mid-to late 2004 the Highway Cost Index increased at a significantly faster rate, finally reaching its peak in late 2008 and turning down as the national recession began to take hold.

There are several reasons for this significant increase in the Highway Cost Index. Obviously, the price of oil can have a major impact on construction commodity prices in terms of asphalt as well as other commodities, not to mention the price of fuel used to power construction machinery. But it is also the case that many commodities, steel and cement as examples, function in the global market. Beginning around this time, as an example, China began to consume over one-half of the world's steel and cement output. These two factors, the price of oil and Chinese demand, coupled with increased construction activity as a result of roadway bond programs in Texas, helped drive up the price of construction.

Finally, I think Exhibit 11 tells an important story. It shows the effect of inflation and construction prices, juxtaposed against a flat fuel tax rate. For example, in 1991 the state fuel tax was 20 cents per gallon and the federal fuel tax was 14.1 cents per gallon. So, in effect, a 34.1 cent combined state and federal fuel tax purchased 34.1 cents of construction. By 2009 however, because of construction commodity price increases, the combined state and federal fuel tax of 38.4 cents per gallon (the federal portion of the fuel tax was increased to 18.4 cents in 1993) purchased about 18.5 cents of construction.

Exhibit 11: Effective Texas and Federal Fuel Tax Rate Adjusted by Inflation in Roadway Constructions Costs



In sum, over the course of the next 20 years, we might reasonably expect the population of Texas to increase by 33 percent. We would also expect vehicle miles traveled to increase by similar amount. However, due to increased fuel efficiency, we can expect fuel tax revenues to decrease by an estimated 22 percent. At the same time, because of increases in the price of construction commodities, we can expect that diminished revenue stream to purchase less in roadway maintenance and fewer new lane-miles.

I'll be happy to try to answer any questions you may have.