

Toyota Prius Fuel Use in Yellowstone National Park – October 2006

Four 2004 Toyota Prius hybrid electric vehicles (HEVs) were introduced into the Yellowstone National Park motor pool during the second half of 2004, as part of a partnership between the Yellowstone Park Foundation and Toyota Motor Sales, USA, Inc. While the four Prius HEVs are not part of the formal Advanced Vehicle Testing Activity (AVTA) test fleet, Yellowstone National Park has agreed to provide miles driven and fuel use data to the AVTA. This is an extension of previous cooperative activities between Yellowstone National Park and the Idaho National Laboratory, which conducts the AVTA's light-duty vehicle testing for the U.S. Department of Energy.

Since being introduced into the Yellowstone motor pool, as of September 2006 the four Prius HEVs (vehicle numbers 916, 917, 918, and 919) have been driven a total of 87,000 miles (Figure 1).

Odometer readings for the four Yellowstone Priuses are captured at fueling events, when the vehicle operators enter the odometer readings into the Yellowstone National Park gasoline management system interface at each fueling location. Since the odometer readings are recorded at fueling events instead of at the end of specific periods, the last and first fueling entries in each six-month period are used when seasonal miles per gallon (mpg) results are discussed. This results in some mileage and fuel use not being used in the discussion.

As seen in Figure 2, the fleet of four Prius HEVs has averaged 54.2 mpg over 69,000 miles. Individually, the four Prius HEVs have averaged between 52.5 and 57.1 mpg. It should be noted that these mpg values are approximately 8 mpg higher than the results recorded by the high-mileage Prius HEVs in the AVTA fleet. Given that the top speed limit in Yellowstone National Park is 45 mph and that the air conditioning in the Yellowstone Priuses are likely used much less, these results are not unexpected.

The Prius HEVs are driven more miles during warm weather months, when all of the Yellowstone National Park roads are open. During winter months, most of the roads are closed to normal vehicle use due to heavy snow fall. Forcing the fuel data into six-month warm and cold periods results in a total of 55,000 miles of accurate fuel use data (Figure 3). During the warmer April-to-September period, the four Prius averaged 53.8 mpg over 44,500 miles. During the colder October-to-March period, Prius vehicles 916 and 919 were not operated much and their data is not used. However, vehicle numbers 917 and 918 averaged 46.3 mpg, or 7.5 mpg less, over 10,500 cold weather miles.

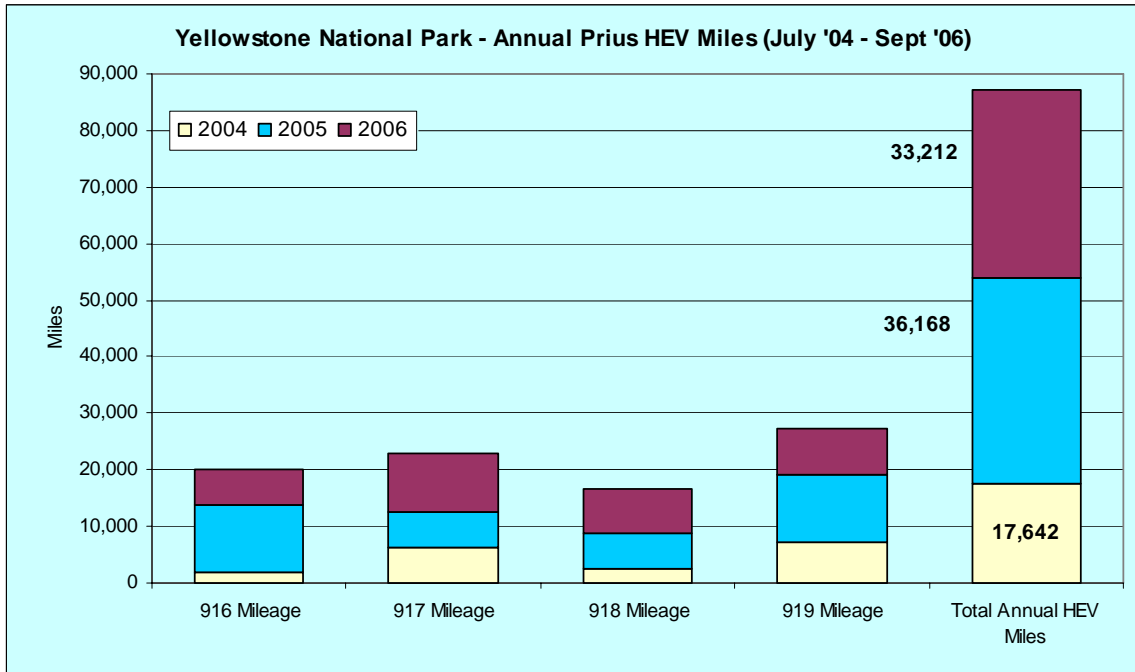


Figure 1. Total Yellowstone National Park Prius mileage accumulation by individual vehicle, fleet and year. The vehicles started operating in the Park during the second half of 2004.

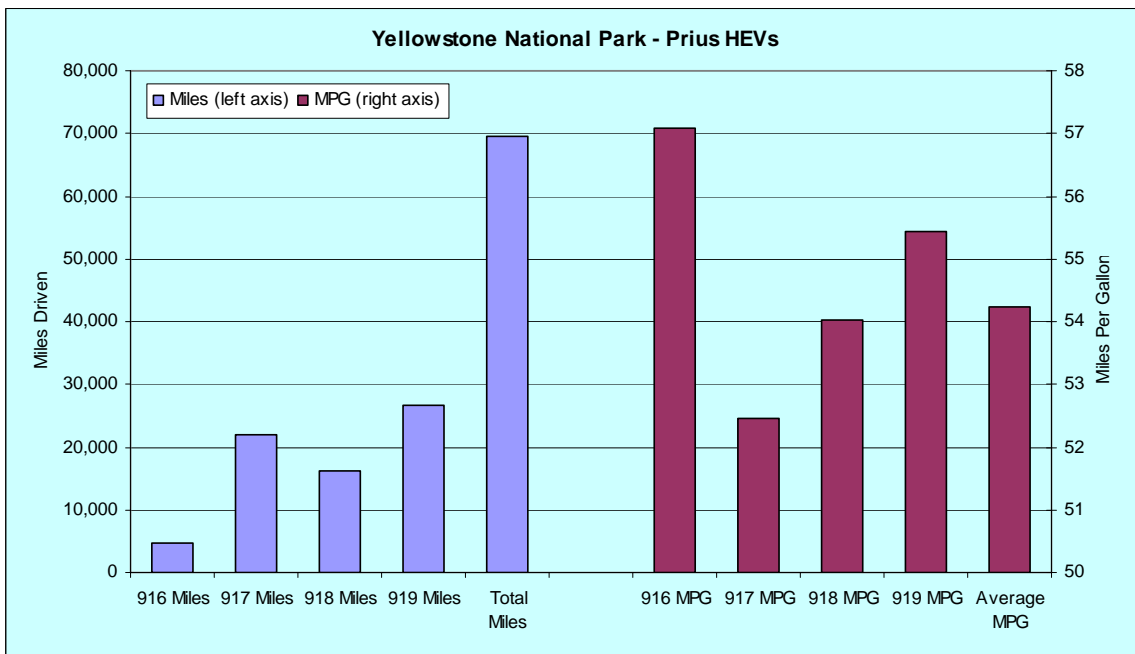


Figure 2. Miles per gallon (red bars) for the Yellowstone National Park Prius fleet and the number of miles the data represents (blue bars).

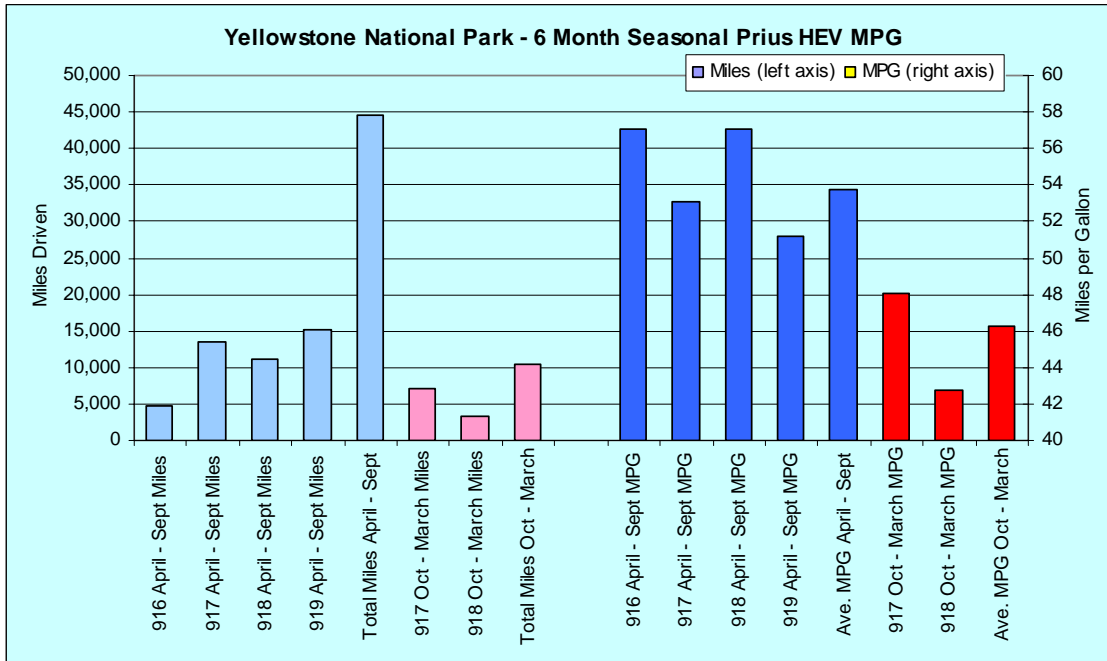


Figure 3. Seasonal miles driven and mpg for the four Yellowstone National Park Prius HEVs. The results are broken into April-to-September (light blue – miles and dark blue - mpg) and October-to-March (pink - miles and red - mpg) six month periods.