Under the Hood, March 2020

Porsche is well known for their turbocharged engines, and for their "Turbo" model 911. Porsche first started experimenting with turbocharging in the late 1950s. In 1969, Porsche entered Can-Am (Canadian-American racing series) with their 917, powered with a 5.4 liter flat 12 cylinder turbocharged engine putting out over 1,000 hp. The 917 so over-powered the series that Can-Am soon made rule changes. By 1972, Porsche was in serious development work on a turbocharged 911, which was introduced as the 911 Turbo in 1975. These Turbos were very expensive at around $25,000, almost twice the cost of a normal 911. The Turbo was the epitome of cool, and unfortunately developed a reputation as a widow maker. With the short wheelbase, rear engine and extreme turbo lag, the Turbo had a propensity for snap oversteer, which left many Turbo owners in the ditch, or worse. In the following years, Porsche continued to improve the Turbo with suspension changes and very wide rear tires that reduced the snap oversteer problem. Then Porsche added all-wheel drive to the Turbo, which continued to improve the model. Porsche is similar to Chevrolet and our Corvettes in that there is always a new model around the corner, so Porsche further improved upon the Turbo by adding the Turbo S option with even more capabilities. Now Porsche has unveiled their forthcoming Taycan, which will be available in both Turbo (670 hp) and Turbo S (750 hp) variants. Porsche claims the Taycan will be able to accelerate to 60 mph in 2.6 seconds. The Taycan isn't a new version of the venerable 911, rather it is a battery powered electric 4 door sports sedan. I am still trying to relate to a "turbo" electric vehicle. I guess many of us owned a "turbo" computer with increased processing speed, or even a "turbo" drink blender. I am positive that all those turbo named electric devices from the 70's and 80's were the result of the Porsche Turbo. Regardless, I still am having a hard time accepting the concept of a "turbo" electric car. The current electric vehicle standard is a 400 volt system, but the Taycan is based upon an 800 volt system. I can just see the owner's manual caution: "Do not, under any circumstance, attempt to service your vehicle at home".

It seems we cannot pick up the newspaper, or magazine, without reading about another electric car or truck soon to be introduced. Electric vehicle sales have skyrocketed, but today less than 2% of all new vehicles sold are electric. Have you thought about our electric power capacity and electric grid if electric vehicles became common place? A recent study put this issue in a bit of perspective. We Americans drive about 3 trillion miles per year, consuming over 170 million gallons of gasoline and diesel. Obviously, our electric utilities cannot replace the fuel energy overnight. According to the study, Texas and California are currently the two highest electric consumption states. If all the vehicles in Texas were converted overnight to electric, the power grid would need an additional 110 terra-watt hours of electricity per year. That is the amount of electricity needed to supply 11 million homes. However, this is only a 30% increase in electric consumption for Texas. Apparently, during the summer months, Texas uses half of the electricity produced just to cool buildings. Yes, there is some sharing of electricity production between states or regions, but basically Texas has a surplus of capacity just sitting idle most of the time. If all the vehicles were charged at night, during off peak hours, Texas wouldn't have to build any more power plants, or windmills, or solar collectors. Although it becomes much more complicated figuring how to use solar power at night to charge vehicle batteries, the concept of overnight charging is valid. California has a more varied climate than Texas and the study predicts that California would need nearly 50% more electricity than current consumption if all the vehicles were electric. Either other states would have to satisfy that demand, or California would have to add 50% more electric generating systems for those electric vehicles. Although the study did not evaluate Washington State, I would

expect that our percentage increase in needed capacity would be even higher than California. Charging your vehicle's battery during off-peak hours, perhaps 11 PM-4 AM, would be required to reduce the demand for more power plant systems. Locally, I would anticipate that every electric vehicle owner plug in their vehicle when they arrive home at 6 PM, just at the time that everyone is getting home and starting dinner, doing the laundry etc. Clearly Seattle City Light and Puget Sound Energy will be required to establish time of day power rates to encourage all the electric vehicle owners to have timers on their charging systems to avail of the lower off-peak hours. Some regions and states already do have time of day electric pricing but expect this to become even more common in the years ahead. This will require all new electric meters for our homes. While SCL and PSE are making this time of day pricing change, I wonder if they will introduce "Demand Pricing" as well. At my business, the PSE meter takes a snapshot of the highest demand for any short interval (1 minute?) during the month. It doesn't matter if that demand is for only 1 minute during that entire month, a significant portion or our electric bill is based upon that demand charge, and the demand charge can easily be 20-25% of the total bill. We have struggled with trying to reduce the demand spike, by starting various equipment and other electric demand at staggered times. However, we have had little success in materially affecting the demand charge. PSE's argument is that they are required to satisfy our highest demand, and thus have built their power generation capacity to meet that short-term demand.

After a disappointing 2019 season, Corvette Racing introduced the new C8R at the IMSA Rolex 24 Hour at Daytona event. A total of 38 cars started the race in 4 classes. Remember that IMSA, and similar race series Le Mans, has four different speed class vehicles all competing at the same time. For the 2020 Rolex, in descending order were DPi, LM2, GTLM (Le Mans-7 cars total) and GTD (Daytona-18 cars total). The C8R is classified as GTLM, and is basically a production appearing body, full out race car. The overall winner was the Wayne Taylor Racing Cadillac DPi winning by about a minute over the second place DPi car. The wining car completed a total of 883 laps. In GTLM, the #3 Corvette, driven by the team of Garcia, Catsburg & Taylor, was within sight of the podium for most of the race, but ultimately finished fourth in class behind the BMW M8 winner and two Porsches. An interesting side note is that driver Jordan Taylor left his father's DPi team to drive for Corvette this year. The #3 Corvette completed 785 laps, or about 2800 miles, and was a lap behind the class winner at the finish. The #4 Corvette suffered a major oil leak and then suspension damage when the car hit the wall leaving the pits. The GTLM winning BMW finished 13th overall while the #3 Corvette was 16th overall, and the #4 Corvette was near the bottom of the pack at 36th. You might remember that last fall I had reported that 16 year Corvette Racing driver Jan Magnussen would not be returning with Corvette in 2020. Magnussen with teammate Garcia won the GTLM championship in 2017 & 2018 in the #3 C7R car but had struggled in the 2019 season. When you have 4 different classes of vehicles competing with many more marques, it can become difficult to follow the relative positions of the racers. I can remember viewing the vertical position pole at the Milwaukee Mile with Indy cars. The positions on the pole could change so fast with pit changes, passes etc, that it could make your head swim. Technology has made this much easier today with the IMSA classes. Each car has a small lighted LED number on the side of the car (in addition to the car number). The LED number will change during the race and shows the relative position of that car within the class. The LED will also display the time in the pits for each stop, and then revert back to the position number. All the GTLM cars had red side mirrors and a small red section on each side of the rear wing. The GTD cars has similar markings in green. The combination of the colored mirrors/wing and LED lights made it much easier to follow the race with the constantly switching TV reporting format.

With 18 entrants including Ferrari, Aston Martin, Acura NSX, Mercedes AMG, BMW M6, Audi and Lamborghini, GTD was a fun group to watch. A Lamborghini won the GTD class. I am sure that all of us wish Corvette Racing better success in the balance of the season.