



MEMORANDUM

TO: Metropolitan Washington Air Quality Committee – Technical Advisory Committee (MWAQC-TAC)
FROM: Dusan Vuksan
SUBJECT: Vehicle Registration Data for Air Quality Conformity Analysis of the 2022 Long-Range Transportation Plan
DATE: September 1, 2020

Vehicle_Registration_Data_in_AQC_2022_Plan_Update_Transmittal.docx

In preparation for the quadrennial 2022 Long-Range Transportation Plan (LRTP) update, this memorandum outlines options for selecting a vehicle registration dataset for use in the mobile emissions modeling for the air quality conformity analysis. Given the recent global changes in behavior related to the COVID-19 pandemic, including lower levels of car purchases in 2020, TPB staff recommend using the 2019 vehicle registration data for the upcoming activities as calendar year 2019 appears to be less of an outlier year at this time.

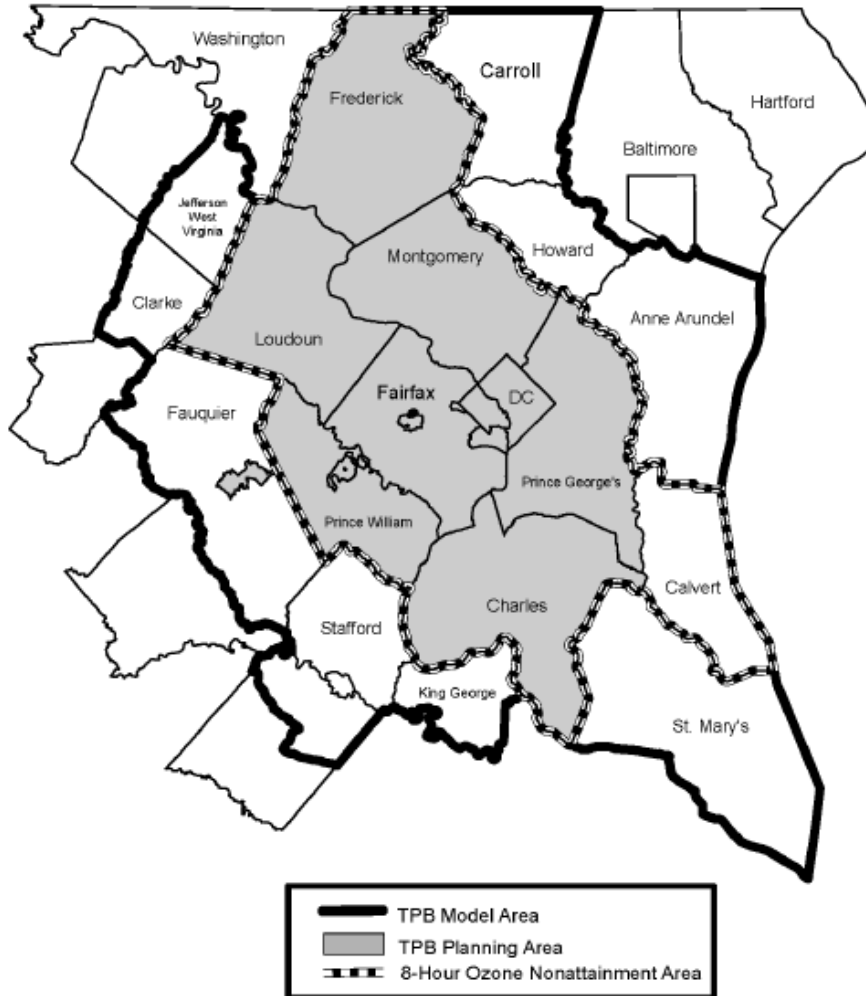
BACKGROUND

Every three to four years, Transportation Planning Board (TPB) staff work with the Department of Environmental Programs (DEP) staff and the District of Columbia, Maryland, and Virginia air agencies to obtain the most recent vehicle registration data (known as vehicle identification number or VIN data) for the jurisdictions in the 8-hour Ozone Nonattainment Area (Exhibit 1). The primary purpose of these datasets is to create model inputs used for the EPA's MOVES mobile emissions model, which, in turn, is used for 1) air quality conformity analyses; 2) State Implementation Plans (SIPs); and 3) estimating greenhouse gas emissions.

The most recent vehicle registration datasets that were decoded and processed by the TPB staff represent 2008, 2011, 2014, and 2016 conditions. During preparations for the quadrennial 2018 Long-Range Transportation Plan (LRTP) update called Visualize 2045, the staff asked for the 2016 data rather than the 2017 VIN data in order to be able to complete the relevant work activities on time. The plan for the next quadrennial 2022 LRTP update has been to decode the 2020 VIN data to coincide with the 2020 National Emissions Inventory (NEI) work activities conducted by the District, Maryland, and Virginia.

Exhibit 1

TPB Transportation Planning Areas Map



RECENT DEVELOPMENTS AND OPTIONS

The COVID-19 pandemic has brought about unprecedented changes in how people conduct their daily activities. As a result of government and voluntary actions, non-essential businesses have closed or shifted to telework-only mode, schools have switched to online/distance learning, sporting and entertainment events have been canceled or significantly altered, and the ways in which people move and utilize the transportation system have changed significantly.

Furthermore, vehicle sales in the second quarter of 2020 have decreased by 30% according to some estimates.¹ Based on this trend, it is highly likely that the end-of-2020 vehicle registration data will

¹ Isidore, Chris. "US car sales just had their worst quarter since the Great Recession."

be an anomaly, compared to the past trends. As such, using this atypical (reduced) automobile registration data as previously planned for NEI and future year mobile emissions estimation would be of questionable merit.

It is to be noted that with the sustained and substantive disruption to economic activity that has impacted travel (mode, amount, frequency, etc.) during 2020, together with the increased teleworking and alternative work schedules, it is reasonable to expect that the amount, pattern and nature of travel, both work and non-work, in the future will be different. This will likely have an impact on vehicle purchases as well. It is, however, unclear, at this time, what the nature and magnitude of this change will be or the period over which this change will be sustained. Given that the 2020 data will reflect atypical conditions, it would be preferable to use the pre-pandemic 2019 vehicle registration dataset instead.

From a motor vehicle emissions estimation perspective, the atypical 2020 vehicle registration data would impact mobile source emissions estimates, since vehicle registration data are used to develop the vehicle population and vehicle age distribution for future years as inputs to the MOVES model. It is hard to predict the nature and magnitude of the impact on future-year emissions estimates that the atypical 2020 vehicle registration data would have. Typically, vehicle registration data have three major components that affect emissions amounts: number of vehicles in the fleet, the age distribution of vehicles in the fleet, and types of vehicles in the fleet. One possible outcome is that the estimates of mobile source emissions for the future years would be lower than previously forecasted if 2020 economic conditions reduced only the number of vehicles and did not affect the age distribution or vehicle mix, which is unlikely. Another possible outcome would be an increase in emissions relative to previous forecasts if the atypical 2020 data contained a higher number of older vehicles, since the decrease in new vehicle purchases implies that consumers may be keeping their older vehicles longer and deferring replacing them with newer and cleaner vehicles. With such uncertainty regarding the impact of current travel disruptions, using the pre-pandemic-period data as a representative dataset for the vehicle fleet would be preferable.

Currently the TPB does not anticipate making any substantive changes to the trip and travel assumptions in its travel demand model for its air quality conformity analysis. The TPB intends to monitor and collect information in the coming years to better understand any changes in travel choice and behavior.

RECOMMENDATION

Given the outlier nature of the 2020 vehicle registration data due to COVID-19-induced changes in travel behavior, TPB staff recommend using the 2019 vehicle registration data for the development of MOVES2014b inputs for both the 2022 LRTP update and SIP-related work activities. Once the 2019 VIN data is obtained, TPB staff would decode it and process it using a similar approach to past work.

<https://www.cnn.com/2020/07/01/business/car-sales-coronavirus-covid-19/index.html>. CNN Business, July 1, 2020.