

TRAFFIC MODEL ISSUES - COMMENTS FROM ARTHUR KATZ, PHD

The following expert comments are submitted on behalf of Arthur Katz, PhD, whose credentials are attached in a curriculum vitae summary.

- 1. There are serious problems with the current FEIS that indicate the traffic models and how they are applied should be reviewed independently before final decisions are made.**

Here are some examples of why I believe there are some serious problems with the current FEIS that indicate the models and how they are applied should be reviewed independently before final decisions are made.

Table 1 shows a comparison of the SDEIS and FEIS PM trip travel times. The difference between the No Build (NB) and General Purpose (GP) travel times both increase and decrease, but all GP and NB travel times in the FEIS are reduced. GP lanes are the non-toll lane part of the toll road.

Table 1. Comparison of FEIS to SDEIS Numbers

PM Trips	SDEIS			FEIS		
	NB	GP	Difference	NB	GP	Difference
GW Parkway to I-370	42	52.1	10.1	27.9	36.8	8.9
Clara Barton to I-370	37.3	48.6	11.3	25.1	35.8	10.7
River Road to I-370	24.4	30.8	6.4	17	26.6	9.6

Table 2 shows the difference projected between the FEIS and the SDEIS projected travel times for identical GP trips. The trips are the PM trips from the George Washington (GW) Parkway, Clara Barton Parkway, and River Road to the end of the toll lanes on I-270 at I-370.

Table 2. Travel Time Different Between SDEIS and FEIS for GP Lanes - PM

	SDEIS	FEIS	Difference	% Reduction
GW Parkway to I-370	52.1	36.8	15.3	30
Clara Barton to I-370	48.6	35.8	12.8	26
River Road to I-370	30.8	26.6	4.2	15

What Table 2 shows is that there is a substantial reduction of travel times for the FEIS compared to the SDEIS. We are talking about a 30 to 15% reduction from 15 to 4 minutes. The result of these changes is to provide MDOT with the ability to claim higher average speeds for the general purpose (GP) part of the toll lanes in the newest analysis, despite the fact the MDOT's own analysis projects on average a 10-minute advantage (faster trips) from the GW, Clara Barton, and River Road PM trips to I-370 for the No Build alternative.

In fact, when you examine the key trips from River Road along the Beltway to Old Georgetown Road exit or to the Democracy exit on the I-270 West Spur, the comparative slowdown between trips in the GP lanes vs. the No Build has grown enormously – 137% (Table 3) for the Beltway trip and 33% (Table 4) for the I-270 West Spur trip.

Table 3. Trip times from River Road to Old Georgetown Road – PM

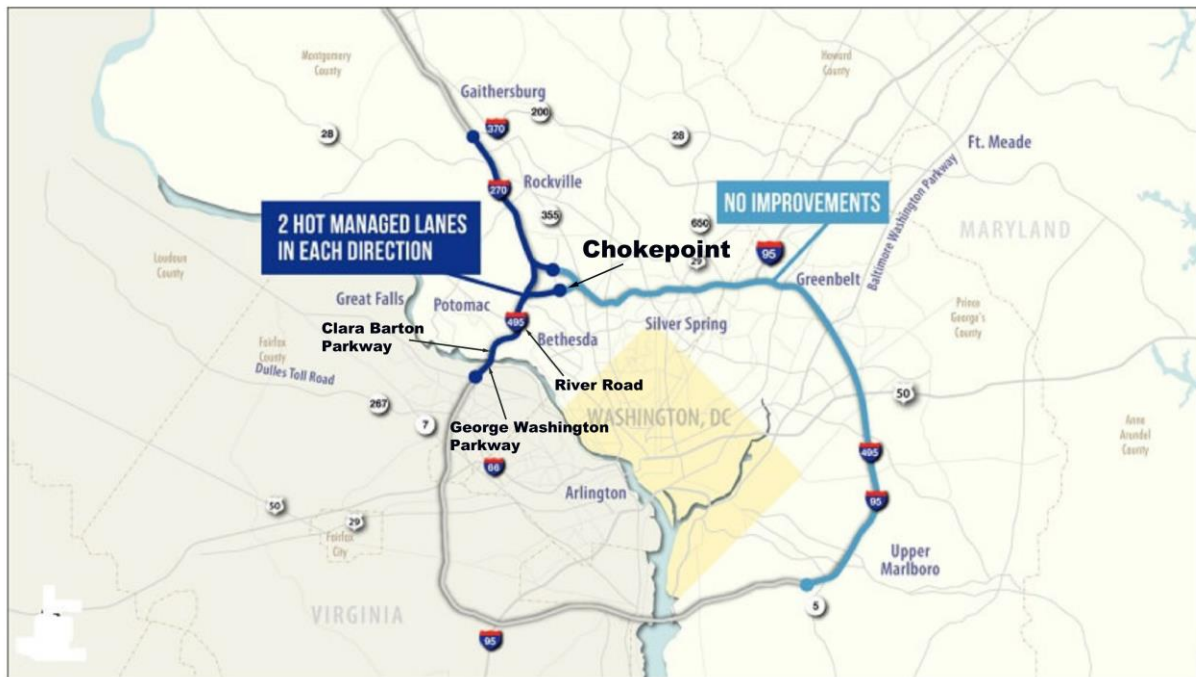
SDEIS		FEIS		% Difference
NB	GP	NB	GP	
37.3	41.9	18.3	29	
Difference GP-NB			10.9	137%

Table 4. Trip times from River Road to Democracy - PM

SDEIS		FEIS		% Difference
NB	GP	NB	GP	
10.4	16.7	4.9	13.3	
Difference GP-NB			8.4	33%

While there a clear advantage for the No Build in the PM trips, reducing the travel times of the GP portion of the toll road minimizes the devastating effects of the PM Beltway Chokepoint by giving the appearance that the speeds will be acceptable.

Figure 1. Map of project area with labeled interchanges and chokepoint



Maryland Department of Transportation State Highway Administration I-495 & I-270 P3 Office map. Interchanges and chokepoint labeled by author.

Table 5 and 6 illustrate another inexplicable change between the SDEIS and FEIS. For trips from Connecticut Ave to the GW Parkway (Table 5) and Connecticut to River Road (Table 6) there is a 470% and 656% increase in the projected travel time advantage for the FEIS vs the SDEIS for GP lanes over the No Build lanes in the PM travel time. The Connecticut to GW Parkway and Connecticut to River Road No Build travel time changes between the SDEIS and the FEIS are 240% and 295%. It is puzzling that such a mismatch could occur and not be explained.

Table 5. Trip from Connecticut to GWP - PM Minutes

SDEIS		FEIS		Increase Time
NB	GP	NB	GP	
16.4	10.1	39.4	9.8	
Difference GP-NB		6.3	29.6	470%

Table 5a. % Change Between SDEIS and FEIS for Connecticut to GWP - PM Minutes

NB-SDEIS	NB -FEIS	% Difference
16.4	39.3	240%

Table 6. Trip from Connecticut to River Road - PM minutes

SDEIS		FEIS		Increase Time
NB	GP	NB	GP	
10.9	7	32.2	6.6	
Difference GP-NB		3.9	25.6	656%

6a. % Change Between SDEIS and FEIS from Connecticut to River Road - PM minutes

NB-SDEIS	NB-FEIS	% Difference
10.9	32.2	295%

Taken together these types of changes that clearly favor MDOT's desired outcome require detailed and independent analysis that cannot be produced in 30 days for 26,000 pages with limited resources of outside groups. Changes of this magnitude should not happen after you had two rounds of analysis before the FEIS, and they certainly should not completely favor MDOT's desired outcome.

Finally, on January 7, 2020, I wrote a letter to MDOT proposing that the toll road begin at Montrose not I-370 to avoid the chaos and destruction of rebuilding all the interchanges.

After some back and forth with MDOT, in a June 3, 2020 letter MDOT conceded that northbound travel times were virtually identical for the GP and No Build, "In the northbound direction, we acknowledge that your proposed alternative would provide comparable travel time benefits as compared to other Build Alternatives." However, if you look at the travel times for the morning Southbound on I-270 from I-370 to Montrose, the Split, Exit 38 Spur/Beltway, River Road, Clara Barton, and GW Parkway

in Table 7, you will see travel time reduction from the existing (pre-pandemic) travel times for the No-Build and GP of 45-60% for various I-270 southbound AM trips. In my opinion, these dramatic reductions are attributable to MDOTs' own traffic management initiative (Innovative Congestion Management Project, see subsequent two sections) without toll lanes.

Table 7. Southbound I-270 Trip from I-370 to Montrose, I-270 Split and West Spur/I-495 FEIS

	Existing	NB	GP	Toll Lanes
Montrose	16.3	5.8	6.2	4.9
Split	19.8	8.1	9.1	6.2
West Spur/I-495	24.4	10.4	11.3	8.3
River Road	26.2	13	13	9.4
Clara Barton	29.2	16.5	15.3	11.3
GW Parkway	29.9	17.3	16.1	12

2. There is almost no travel-time benefit to the toll lane plan for most drivers on I-270 and I-495 while there are clear losses in terms of road safety.

Contrary to the assertion in the FEIS, the majority of travelers on I-495 and I-270 would not experience less congestion after toll lanes were built than they do today. They would certainly experience more safety risk with the loss of the left lane shoulder, increased concentration of tractor trailer traffic, and increased congestion and bottlenecks. Despite occupying 1/3 of the capacity of the Betlway, the toll lanes would only carry 1/6 or less of the drivers on the highway system.¹ The toll lanes and the travel time savings offered will only benefit a small slice of Marylanders, typically the most affluent.

This lack of travel time benefit for the general public is illustrated in FEIS Table 4-7 (at 4-13), which summarizes the expected travel time benefits of the toll lanes for 2045. On most segments, there is no or almost no travel time improvement for the Preferred Alternative General-Purpose lanes over the No Build scenario. Note the highlighted segments below and lack of meaningful difference in travel times for No Build and Preferred Alternative General-Purpose lane travelers.

Table 4-7: 2045 Corridor Travel Speed (mph) Results from VISSIM Model

Peak Period	Corridor	Travel Lanes	Alternative	
			No Build	Preferred
	I-270 Northbound from I-495 to I-370	General Purpose Lanes	55 ²	61
		HOT Lanes	-	63

¹ Sierra Club et al. SDEIS comments, November 30, 2021 at 20, available at <https://www.sierraclub.org/sites/www.sierraclub.org/files/sce-authors/u18365/2021-11-30%20-%20Sierra%20Club%20et%20al.%20SDEIS%20comments%20%281%29.pdf>.

AM Peak Hour ³ (7-8AM)	I-270 Southbound from I-370 to I-495	General Purpose Lanes	44 ²	45
		HOT Lanes	-	62
	I-495 Outer Loop from I-270 West Spur to George Washington Memorial Parkway	General Purpose Lanes	35	50
		HOT Lanes	-	62
	I-495 Inner Loop from George Washington Memorial Parkway to I-270 West Spur	General Purpose Lanes	38	55
		HOT Lanes	-	63
	I-495 Outer Loop from MD 5 to I-270 West Spur ¹	General Purpose Lanes	20	22
		HOT Lanes	-	-
I-495 Inner Loop from I-270 West Spur to MD 5 ¹	General Purpose Lanes	26	26	
	HOT Lanes	-	-	
PM Peak Hour ³ (4-5PM)	I-270 Northbound from I-495 to I-370	General Purpose Lanes	27 ²	27
		HOT Lanes	-	45
	I-270 Southbound from I-370 to I-495	General Purpose Lanes	57 ²	58
		HOT Lanes	-	63
	I-495 Outer Loop from I-270 West Spur to George Washington Memorial Parkway	General Purpose Lanes	22	52
		HOT Lanes	-	63
	I-495 Inner Loop from George Washington Memorial Parkway to I-270 West Spur	General Purpose Lanes	14	15
		HOT Lanes	-	62
	I-495 Outer Loop from MD 5 to I-270 West Spur ¹	General Purpose Lanes	19	32
		HOT Lanes	-	-
I-495 Inner Loop from I-270 West Spur to MD 5 ¹	General Purpose Lanes	25	24	
	HOT Lanes	-	-	

Notes: ¹ Shaded rows reflect locations outside the Phase 1 South limits with no action proposed under the Preferred Alternative. ² No Build results along I-270 are shown as an average of the Express Lanes and the adjacent Local Lanes. Under No Build conditions, vehicles enter and exit I-270 via a separated Local Lanes system, which will be eliminated under the Build alternatives to reduce the roadway footprint and minimize impacts. ³ Results reported here for the overall AM and PM peak hours, consistent with DEIS and SDEIS. For complete results covering entire study period (6-10AM, 3-7PM), refer to **FEIS, Appendix B**.

Another table (FEIS Table 4-6 at 4-12), further summarizes the lack of meaningful change for General Purpose Lane travelers despite the introduction of toll lanes. In 2045, General Purpose lanes might – if the modeling is correct and if things go as planned, two big ifs – go 4 miles per hour faster than if the toll lanes had never been built. These tables illustrate the lack of public benefit of these private toll lanes, whose profits would be for an Australian based company and its shareholders to profit off of Maryland’s long-term compounding congestion woes.

Table 4-6: 2045 Average Speed – Entire Study Area

Alternative	Average Speed ¹ (General Purpose Lanes)	Average Speed ¹ (HOT Lanes)
No Build	24 mph	N/A
Preferred Alternative	28 mph	60 mph

Note: ¹ Reflects weighted average speed on I-270 and I-495 during peak hours (7-8AM and 4-5PM)

It is telling that these numbers in FEIS Table 4-6 were a weighted average speed on I-270 and I-495. It would have been easier and told the public more to give the average speeds for I-270 and I-495.

This expensive private concession with a six-year build time and a 50-year life cycle would not meaningfully reduce travel times for General Purpose lane drivers once toll lanes are built. In fact, as time goes on, induced development, induced growth, and induced demand as well as more toll lanes around the DC metro region will induce more development and traffic, and the congestion will become even worse.

This information must be taken into account in determining the reasonableness of alternatives, including the appropriateness of the preferred alternative for taxpayer subsidy, and its risks, benefits, and potential costs for all Marylanders.

When reviewing who wins and who loses from MDOT's partnership with Transurban, it is clear that privatization of public infrastructure to further advantage the most advantaged segment of society simply repeats and reenacts a grave historical wrong..

The FEIS "Historical Context" section states:

Current disparate economic and environmental health conditions of racially segregated communities can be traced largely to policy (or the lack thereof) enacted by federal, state, and local governments during the United States' period of suburbanization from 1940 to 1980. Suburbanization was made possible in part by construction of America's interstate highway systems that allowed families with automobiles, to live, work, and travel more conveniently and more extensively. However, the benefits and adverse impacts from construction and operation of these interstate highway systems, plus other regional and local highway networks, were not distributed equitably. Instead, the benefits and adverse impacts were purposefully concentrated among different racial populations, with majority-minority race and ethnicity communities—primarily black and African American communities—experiencing the most adverse impacts and the fewest benefits. Predominately white communities were typically intentionally avoided during highway design and construction yet experienced the most benefits from highway implementation.²

Future historical accounts will surely draw the same conclusion about Maryland's unjustified proposed experiment with lopsided private-sector favoring P3 toll lane expansion, and reach the same conclusions:

Current disparate economic and environmental health conditions . . . can be traced largely to policy (or the lack thereof) enacted by federal, state, and local governments during the United States' period of *public-private toll lane highway*

² FEIS Chapter 5 at 5-135 to 5-136, available at https://oplanesmd.com/wp-content/uploads/2022/06/11_MLS_FEIS_AppG_Final-Section-4f-Evaluation_-June-2022p.pdf.

expansion. . . . Unmanaged sprawl was made possible in part by expansion of America's interstate highway systems that allowed families with automobiles, to live, work, and travel more conveniently and more extensively. However, the benefits and adverse impacts from construction and operation of these tolled interstate highway systems . . . were not distributed equitably. Instead, the benefits and adverse impacts were purposefully concentrated among different segments of society, with the general public, minorities, and those with low income experiencing the most adverse impacts and the fewest benefits.

3. The Agencies provided misleading and inaccurate responses to public comments on the I-270 Innovative Congestion Management Project and on the number of existing lanes that will remain on I-270.

The Agencies' response to Sierra Club et al. SDEIS comments state (FEIS App'x T.2.B. Vol 2 at CO-828):

With respect to the ICM project, the combination of those modifications on I-270 and the opening of the Watkins Mill interchange in 2020 have resulted in some traffic benefits. Even with these improvements, overall congestion on I-270 remains a serious issue, with the most recent data showing average southbound speeds on I-270 during the AM peak periods of approximately 30 mph and below 40 mph northbound during PM peak periods. While the ICM project has benefitted short-term congestion, they will be insufficient to address long-term mobility needs.

But the project document (at 18) on MDOT's ICM website states that the ICM improvements will last to 2040 and beyond. That is at least 18 more years, and during those 18+ years of ICM relief, the county and state can be working on expanding MARC service and/or the metro beyond Shady Grove, and a host of other ways to improve traffic flow on northern I-270.

The financial costs of this project for the City of Rockville residents and many others, as well as environmental and other costs do not outweigh such minimal benefits.

The Agencies' response also says "overall congestion on I-270 remains a serious issue." That is not true for lower I-270 (see Sierra Club et al. SDEIS comments). North of I-370 is where the congestion problems are. Lower I-270 is not presently congested; however this project would make congestion worse in the short term for everyone, and also worse in the long term for people using the general-purpose lanes.

Another response by the Agencies to DontWiden270.org comments (FEIS App'x T.2.B. Vol 1 at CO-595) incorrectly states:

The I-270 Innovative Congestion Management (ICM) project is designed to address existing issues and short-term needs, unlike the Managed Lanes Study, which includes addressing long-term traffic growth as part of the Purpose and Need.

This statement about ICM only addressing existing and short-term needs contradicts MDOT's own [ICM website](#). On it, a key document states that the improvements "The CGI Team's proposed improvements will provide benefits over the No- Build condition to 2040 and beyond."³

Furthermore, it is ironic that this state-funded project accomplished nearly all the things the MLS plans to do to address traffic congestion and much more, all for a fixed price contract that was ~\$100 million dollars --a mere fraction of the MLS project's multibillion dollar price tag, compensation events, and guaranteed internal rate of return to the developer.

Note how many things this project achieved, all while publicly funded and including a goal of improved safety (emphasis added):

- [MDOT SHA] noted that the I-270 project proposes a two-pronged approach of roadway improvements and innovative technologies and techniques to **maximize vehicular throughput, minimize vehicle travel times, and create a more predictable commuter trip** along I-270 between I-70 and I-495
- According to the project website, the 14 roadway improvements will reportedly **increase capacity and vehicle throughput and address safety deficiencies by strategically eliminating existing bottlenecks**, the key element limiting vehicular throughput along the corridor, coupled with the impact of crashes and other incidents.
- MDOT SHA reports that the traffic management system will help **reduce congestion by improving traffic flow and safety**. An automated smart traffic flow management system will combine real-time communication to drivers, traffic monitoring with cameras and sensors, and intelligent signal systems to optimize traffic flow and reduce crashes along I-270.
- The project was announced on April 19, 2017, by Maryland Gov. Larry Hogan, stating that it would **save drivers up to 30 minutes on their morning commute southbound** from Frederick to I-495.
- The design-build team includes 16 firms, selected through a **competitive bidding**.
- According to MDOT SHA, the project will break 14 bottlenecks and add 23 new lane miles; more than 25 real-time traffic communication signs; and more than 30 intelligent signals that will work together to deliver **dynamic traffic management along the entire I-270 corridor**.⁴

Publicly-funded dynamic traffic management has been an alternative to private sector dynamic tolls all along but was not included in the alternatives and should have been.

³ [Progressive Design-Build \(PDB\) IS 270 – Innovative Congestion Management Technical Proposal](#), January 19, 2017 at 18..

⁴ Ruggiero, Sandra, Maryland Eyes Innovative Fix for I-270 Congestion, ConstructionEquipmentGuide.com, July 8, 2019 <https://www.constructionequipmentguide.com/maryland-eyes-innovative-fix-for-i-270-congestion/45460>

The Agencies' response in the FEIS to DontWiden270.org SDEIS comments also states (FEIS App'x T.2.B. Vol 1 at CO-597):

FHWA has participated as the lead Federal Agency on this NEPA Study. Under the Preferred Alternative there is not a reduction or "loss" of the number of free or general purpose lanes on either I-495 or I-270. On I-495, the Preferred Alternative consists of adding two new, HOT managed lanes in each direction from the George Washington Memorial Parkway to west of MD 187 with four general purpose (free travel) lanes remaining in the build condition. On I-270, the Preferred Alternative consists of converting the one existing HOV lane in each direction to a HOT managed lane and adding one new HOT managed lane in each direction from I-495 to north of I-370 and on the I-270 east and west spurs with five general purpose (free travel) lanes remaining in the build condition.

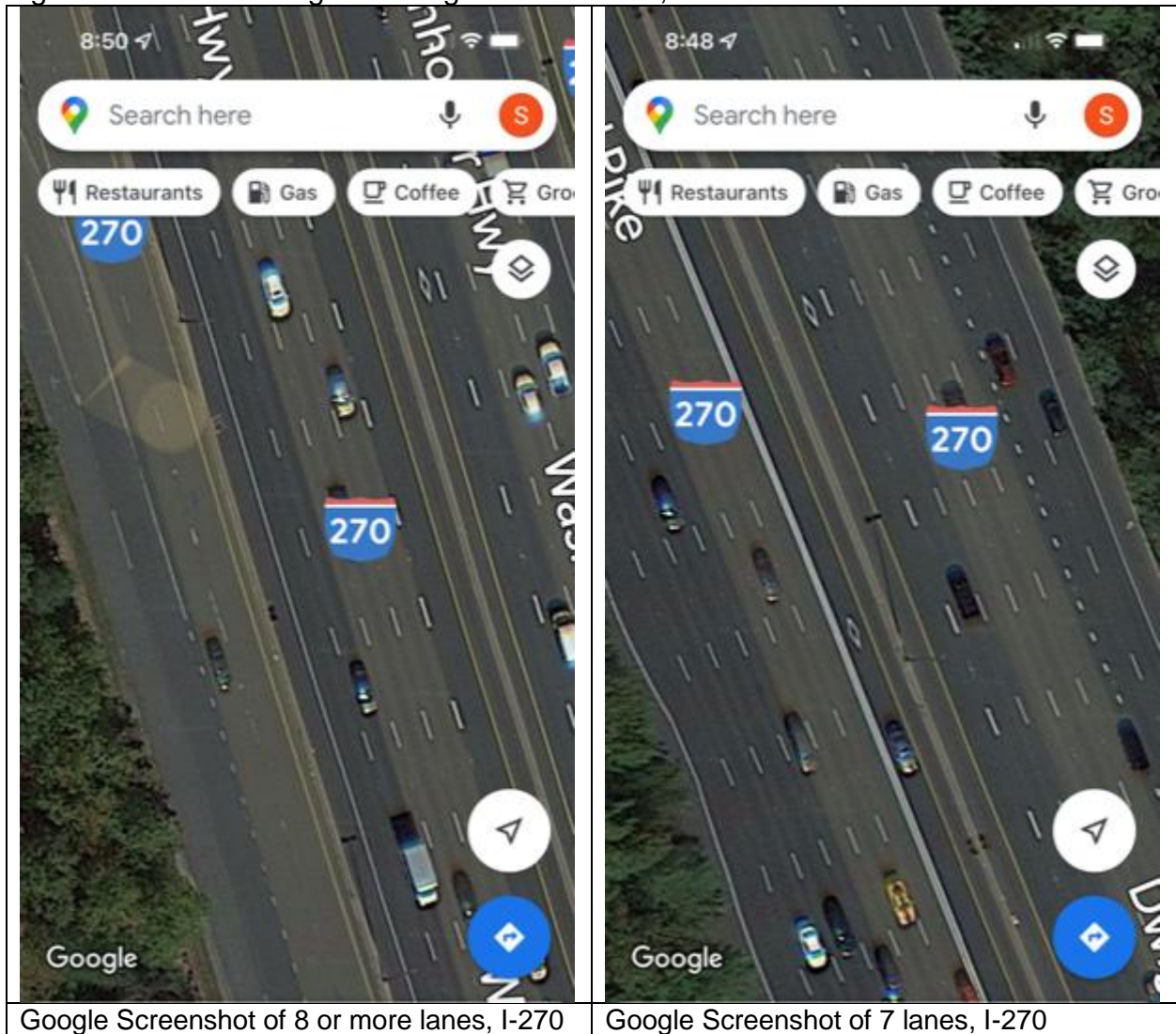
This is highly misleading.

The I-270 Innovative Congestion Management Project involved TSM/TDM and also created an extra lane on each side by converting the inner shoulder to the HOV-2 lane and changing the existing HOV-2 lane to a general purpose lane. That is why there are now 8 lanes, one of which is HOV-2, but only 9% of the time. MDOT asserts that there are only 7 general purpose lanes, but really there are 7-9 general lanes. But whether it is 7 or 7 -9, that is still more than the 5 that the FEIS says will remain. The Agencies' misleading response says "The improvements included as part of the I-270 ICM project discussed above were all incorporated into the future year no- build traffic models." The Agencies need to clarify if the extra lanes that were created were included as they should have been.

Five general purpose lanes is two less than the current number on Lower I-270 (see Figures below. MDOT's own I-270 Innovative Congestion Management (ICM) website shows eight lanes resulting from the lane that was added when they moved the HOV lane to the inside shoulder and another lane added when the merge lanes were

screenshot showing the 8 or more lanes. This is just south of the Montrose Road bridge. There are 5 general lanes, one of which is HOV-2. In addition, there are 2 local through lanes. Finally, there are two merge lanes. One of the merge lanes ends, but the other becomes the exit-only lane for the Democracy Blvd. exit.

Figure 9. Seven and eight existing lanes on I-270, not five



The second Google Map screenshot is farther south, showing seven general lanes (one of which is HOV-2).

The ICM should be a proud achievement of MDOT, providing real positive impacts - saving money, implementation time and minimizing travel disruption. Instead, it is hard to tell from the FEIS, SDEIS and other MDOT documents that it ever existed and certainly that it is and will make a major contribution to reducing congestion on all of I-270, not just the study area. This is a disservice to the responsible government officials charged with making decisions whether to approve this project, and to the general

public's ability to knowledgably provide their views in the EIS process and the political arena.

Despite MDOT assertion this is a short-term fix, the ICM effects will be long term as reflected in the FEIS own results. In MDOT's 2045 projections of I-270 travel times, particularly in the morning peak, a 40-60% improvement (quicker trips) in trip times compared to MDOT's own data on pre -pandemic travel times that is reflected in Table 7 in above section 1. Examining the ICM strategy and implementation also make it clear that congestion on I-270, particularly above I-370, is driven in many cases by local bottlenecks not connected strongly, if at all to what takes place south of I-370.

These results raise the question of why MDOT did not explore a Beltway ICM running to at least the original end point MD5 as part of the No Build alternative.

Taken together the information in the three parts of this section reflect an analytical process that had an objective in mind and would not to be diverted from completing this task. The process has produced lots of data but has not produced the needed insights, it has not produced a fair description of the pros and cons, the weaknesses as well as the strengths of the proposed preferred alternative. In essence, at least in the traffic analysis, it has not met the test of balance and transparency required of a satisfactory EIS.

Arthur Katz, PhD

Curriculum Vitae Summary

Dr. Arthur Katz earned a Ph.D. in chemistry from The University of Rochester and subsequently an M.S. in meteorology from the Massachusetts Institute of Technology (MIT). He worked almost 40 years managing scientific programs in the U.S. Department of Energy and predecessor agencies, dealing with areas such as fusion energy, the Human Genome Project and the Regional Issue Identification and Assessment project that studied the regional environmental impacts of DOE's National Energy Plan. From 1970-72, Dr. Katz was the chief negotiator for the Greater Boston Committee on the Transportation Crisis (GBCTC), the largest coalition of community and other private groups participating in the Boston Transportation Planning Review (BTPR). The Boston Transportation Planning Review (BTPR) was a U.S. Department of Transportation (DOT) funded study that became the prototype for many of the requirements for Environmental Impact Statements for DOT. It also resulted in the decision of the Governor of Massachusetts to halt proposed interstate urban highway construction in and around Boston in favor of a mass transit alternative.

Dr. Katz is a resident of Rockville, Maryland.