ATTACHMENT 6

Written Testimony on Application #120160290 (a.k.a. WMAL Development)

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Introduction

This testimony addresses neighborhood concerns with the WMAL Development Application. While the Applicant's Traffic Impact Study (a.k.a. Local Area Transportation Review or LATR) finds that no mitigation is required, this testimony insists that the proposed development in fact does not meet the requirements of the County's Adequate Public Facilities Ordinance, also known as the Subdivision Staging Policy (SSP). Specifically, one of the studied intersections, Fernwood Road and Democracy Boulevard, does not meet the County's adequacy criteria

Largely, the Applicant's LATR probably meets the "letter" of the both the SSP and the LATR Guidelines. That said, given the multiple subjective "grey" issues raised below, it is expected that the Planning Department and Board should exercise discretion and make judgment calls as to whether or not the Applicant's LATR is actually consistent and compliant with the intent of the SSP and Guidelines. Over the past 18 months, Chair Anderson has often spoke on the record about how much discretion the Planning Department Staff have in reviewing studies such as LATRs. He also suggested that results that seemingly pass SSP requirements can be challenged.

Over the same 18 months, the Planning Department Staff have been very generous with their time by attending meetings and listening to community positions. However, the simple truth is that the Staff members have chosen to disregard every single one of the traffic-related issues listed in this testimony; no discretion has been exercised.

I hope that in review of this testimony, this discretion often referred to by Chair Anderson is actually exercised. This testimony only includes facts that can be substantiated with data, the majority of which has been produced by Montgomery County agencies.

Executive Summary

The Applicant's LATR forecasts a PM CLV of 1,512 for the intersection under scrutiny, and the policy area adequacy threshold for CLV is 1,550. This means that, as is, the intersection passes – *by a margin of only 38 points*. The following list provides an executive summary of the concerns regarding the Applicant's LATR. Each concern, if addressed, would add to the projected total (future conditions, including the proposed site-generated) PM critical lane volume (CLV) of the intersection. Some of the issues raised in this testimony may appear to have only a minor impact on CLV, but together raise the projected total CLV above the 1,550 threshold (some individually, some only in aggregate). Note that all of these concerns have been raised with the Planning Department and the Applicant as early as June 2016.

1. **Applicant LATR Traffic Count Inconsistent with Historical Data:** The Applicant's observation for the "existing CLV" for Fernwood & Democracy is the lowest CLV in the Planning Department's entire historical online database for this intersection. *In fact, the LATR adequacy test FAILS for every single historical datapoint: except the Applicant's.* This includes the observation measured just four weeks prior, which was sponsored by the Planning Department.

2. **Inconsistent and Insufficient Trip Distribution used for NIH Expansion Pipeline Project:** According to the Suburban Hospital Expansion LATR, over 4% of the future NIH Expansion PM peak-hour outbound vehicle trips will use northbound Greentree Road. However, the Applicant's LATR only allocates only 2% of future NIH Expansion trips to this route. *This missing 2% is enough to result in a LATR FAILURE at Fernwood & Democracy.* Additionally, the Applicant's LATR does not allocate any PM outbound vehicle trips westbound on Democracy Boulevard for this pipeline project, which is inconsistent with the LATR Guidelines.
3. **No Consideration of Large Vacancies in Rock Spring Office Buildings:** Large vacancies in Rock Spring, often referenced by the Planning Department and Board, can result in inaccurate forecasts of potential future conditions. Large vacancies can be filled at any time (without regulatory review), increasing "existing" CLV counts beyond the values that are being measured. It is inconsistent that the Planning Department demands applicants to incorporate the impact of pipeline developments (i.e., buildings that are approved but unbuilt), but don't demand any consideration for buildings that are approved, built, but happen to be vacant.
4. **LATR CLV values are calculated for the peak-volume hour, not the peak-CLV hour:** This issue is a flaw of the LATR Guidelines and not of the Applicant – but it should be considered. The Guidelines state that the CLV values should be calculated during the AM and PM "peak" hours, and defines this as the hour where the "highest sum of the existing traffic [is] entering all approaches to each intersection" (i.e., the hour that has the most overall volume, or peak-volume hour). Unfortunately, this doesn't necessarily coincide with the hour yielding the highest CLV, the peak-CLV hour. *The peak-CLV hour for Democracy and Fernwood yields a CLV that is 16 points higher than the peak-volume hour, which is nearly half of the 38-point test margin.*
5. **A Delay-Based Adequacy Test is Justified and Should be Required:** Based on testimony by Chair Anderson during 2016-2020 SSP hearings, the Planning Department Staff have the discretion to be able to demand a delay-based (e.g., Highway Capacity Manual, or HCM methodology) for any studied intersection, even if the CLV is adequate (i.e., under the 1,600 SSP threshold that triggers HCM analysis). The rationale for the 1,600 threshold is that it is well understood that CLV values are not dependable for volume-to-capacities approaching 1.0. By comparing historical CLV and time travel index (TTI) data from the Planning Department, one can easily determine that Fernwood & Democracy is operating at a volume-to-capacity level greater near or greater than 1.0, *and thus a delay-based analysis is warranted. We request that a delay-based adequacy test be conducted prior to approval of the Applicant's Preliminary Plan, and that the Applicant be required to mitigate appropriately, pending the results.*

Substantiating Data

All of the above assertions are substantiated below. These data were presented in detail to the Planning Department over the last 18 months.

Applicant LATR Traffic Count Inconsistent with Historical Data

A series of historical CLV observations for Fernwood & Democracy are available online through the Planning Department's Intersection Analysis Tool [4]. A total of six datapoints, including the Applicant's are in the database spanning June 2004 through November 2015. The Applicant's LATR [1] find that pipeline and proposed projects increase the future PM CLV by 222 and 68 points, respectively (a total of 290 points). Figure 1 below shows the calculated total future PM CLV for each of the historical CLV observations. ***These data demonstrate that every single observation results in a failure of the LATR adequacy test…except for the Applicant's***. Note that the data, 6 points over 11 years, is too sparse to determine any long-term trends. The datapoints are also single observations and are subject to measurement noise due to normal day-to-day variations in traffic flow. Furthermore, it is imperative to realize that one of the datapoints was taken only 4 weeks prior to the Applicant, making the Applicant's datapoint suspect.

In summary – yes – the Applicant meets the letter of the LATR adequacy test, but it is highly unlikely that their single observation is representative of actual conditions.

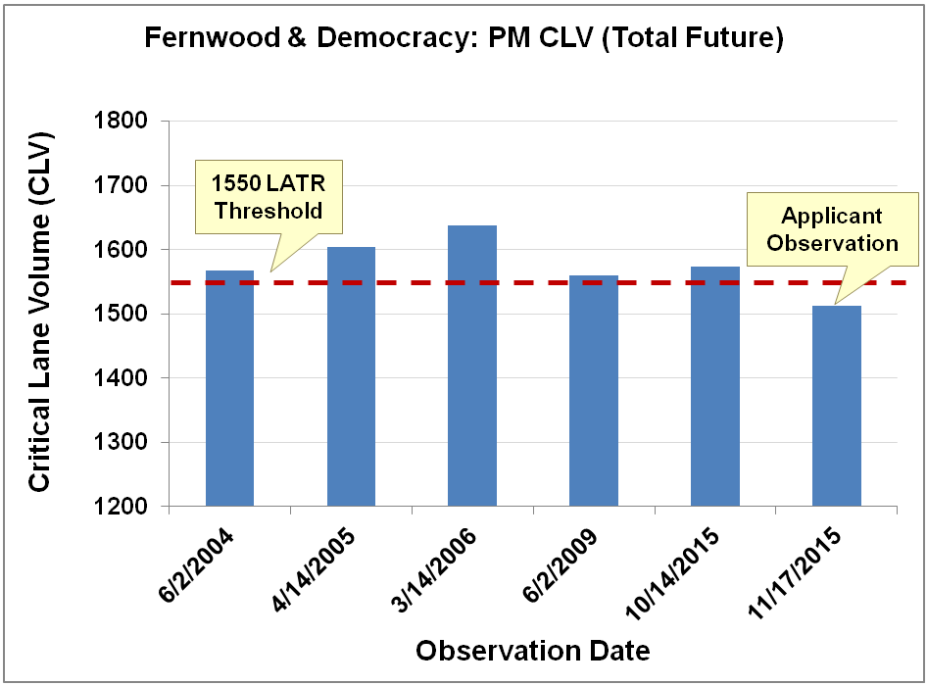

Figure 1: Total Future PM CLV based on Historical Observations

Inconsistent and Insufficient Trip Distribution used for NIH Expansion Pipeline Project

One of the pipeline projects in the Applicant's LATR is the NIH Expansion Project. According to their Scope of Agreement, the LATR should incorporate the impact of 2,902 PM additional outbound PM peak-hour vehicle trips leaving the NIH campus, impinging on the intersections studied in the Applicant's LATR. According to page A-85 of the Applicant's LATR, 58 of the 2,902 trips (2%) are distributed from NIH onto Greentree Road, and all 58 subsequently turn left on Democracy from Fernwood. This testimony asserts that 2% distribution is too low and not representative of reality. It is also inconsistent with the 2013 LATR/TPAR Guidelines [3] and other LATRs that include the NIH Expansion Project. Refer to the LATR for the Suburban Hospital Expansion [5], performed by Wells+Associates, the same company that performed the Applicant's LATR. The Suburban LATR distributes over 4% of NIH Expansion trips (PM outbound) onto Greentree Road. *The difference of 2% in the Applicant's LATR is 58 trips, more than enough to fail the LATR adequacy test all by itself* (the "as is" margin is 38 points).

After countless hours of analysis, documentation and providing detailed references for nearly two years, Planning Department Staff finally capitulated on May 24, 2017 that "We agree that the traffic coming from NIH onto Greentree could be as high as 4%." The Planning Department Staff do also theorize that it's "reasonable to assume" that the NIH traffic on Greentree diffuses by half (i.e., to 2%) by the time it gets to Fernwood & Democracy. This is unfounded, not likely to be realistic – and most importantly – is not consistent with the Applicant LATR. As described above, the Applicant's LATR routes 100% of NIH Expansion traffic on Greentree to the Fernwood & Democracy intersection.

In summary, the Applicant's LATR underestimates the number of future NIH vehicle trips that impinge on Fernwood & Democracy.

Figure 2: Proposed Site and NIH Locations

No Consideration of Large Vacancies in Rock Spring Office Buildings

The intersection of Fernwood & Democracy is adjacent to the Rock Spring office park, which has a large vacancy rate, often cited by the Planning Department and Board. In fact the public hearing draft for the Rock Spring Master Plan states that the current vacancy is 22.3% [7]. The vacant office spaces can be filled at any time without requiring any regulatory review from the County. The "total future" CLV levels forecasted by the Applicant's LATR do not include this potential. That is, neither the "existing" nor the "background" CLV levels account for the fact that some or all of these properties can become occupied. It is inconsistent that the Planning Department demands applicants to incorporate the impact of pipeline developments (i.e., buildings that are approved but unbuilt), but don't demand any consideration for buildings that are approved, built, but happen to be vacant. To quantify the magnitude, according to the Rock Spring Master Plan Public Hearing Draft, Rock Spring has about 4.7 million square feet of space. Therefore, there is over 1 million (22% of 4.7 million) square feet of vacant space. Using the "General Office" Peak Hour Trip Generation Formula from the LATR Guidelines, *this equates to over 1,400 PM peak-hour trips that are unaccounted for*. It is understood that Planning Department Staff have the authority to require Applicant's to account for large nearby vacancies. Despite 24 months of advocating this issue, the Planning Department has refused to address the request.

In summary, as many as 1,400 future PM peak-hour trips are unaccounted for in the Applicant LATR, due to the large vacancy in Rock Spring. Not all of these trips would affect the CLV of the Fernwood & Democracy, but it's reasonable to assume that some of the trips would. Given the narrow margin by which the "as is" LATR adequacy test passes, this issue needs to be addressed.

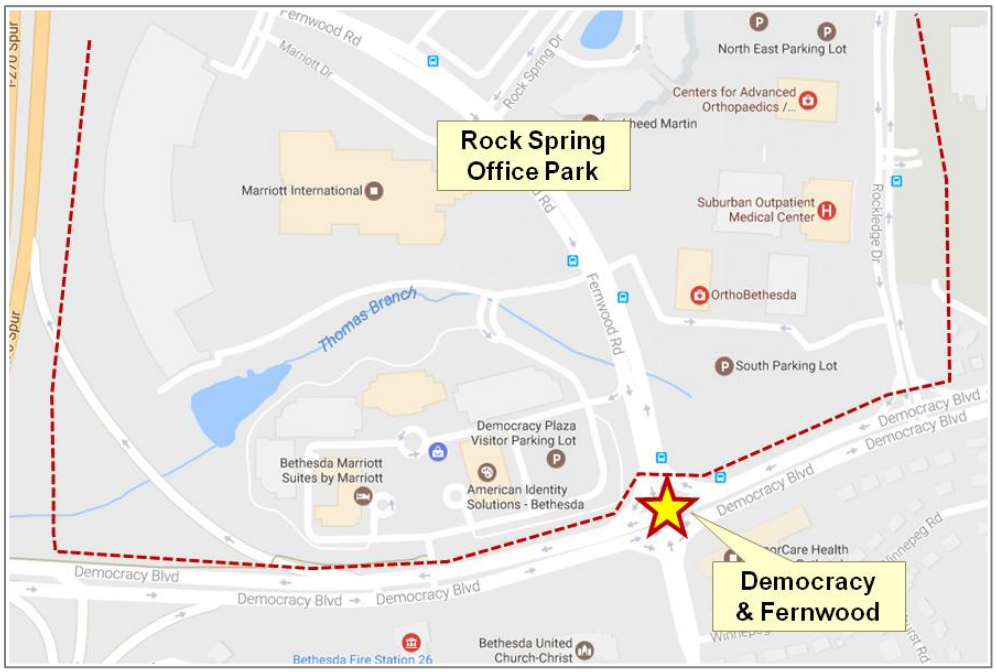

Figure 3: Relative locations of Rock Spring Office Park and Intersection of Fernwood/Democracy

LATR CLV values are calculated for the peak-volume hour, not the peak-CLV hour

This is an issue with the LATR Guidelines and not of the Applicant – but it should still be considered. The Guidelines state that the CLV values should be calculated during the AM and PM "peak" hours, and defines this as the hour where the "highest sum of the existing traffic [is] entering all approaches to each intersection" (i.e., the hour that has the most overall volume, or peak-volume hour). Unfortunately, this doesn't necessarily coincide with the hour yielding the highest CLV, the peak-CLV hour. Per the SSP, CLV is the predominant adequacy metric for intersections. As such, it is scientifically unwise to base adequacy tests on CLVs that are less than the maximum values. In the case of the Applicant's LATR and the intersection of Fernwood & Democracy, at 4,458 total cars, the PM peak-volume hour is 4:45PM-5:55PM, which had an observed CLV of 1,222. However, the peak-CLV hour of 5:15PM-6:15PM has less total volume (4,266), but a higher observed CLV of 1,238. These data are summarized in Figure 4.

Hour	Total Volume (Vehicles)	CLV
4:45-5:45 PM	4,458	1,222
5:15-6:15 PM	4,266	1,238

Value defined by LATR Guidelines

Actual Peak PM CLV

Figure 4: Peak Hours: Volume vs CLV for Fernwood & Democracy

In summary, the peak-CLV hour for Democracy and Fernwood yields a CLV that is 16 points higher than the peak-volume hour, which is nearly half of the 38-point test margin.

A Delay-Based Adequacy Test is Justified

This section will substantiate the fact that, technically, *the intersection of Fernwood and Democracy is already over-congested under **existing** conditions*. As such, the appropriate adequacy test, according to the LATR Guidelines, is not CLV, but a delay-based assessment such as the Highway Capacity Manual (HCM) methodology.

1. The LATR Guidelines call for a delay-based test for "over-congested" intersections
   The LATR Guidelines state:

   "The LATR test is undertaken in two steps to best measure congestion levels. The initial Critical Lane Volume (CLV) analysis is performed to screen out intersections with a CLV less than 1,600, the threshold between stable (but close to congested) and unstable (over-congested) road conditions. For intersections with a CLV of 1,600 or greater, the more detailed Highway Capacity Manual (HCM) method is used to measure delay."

   From this verbiage it is clear that the *intent* of the Guidelines is to have applicants employ the HCM method for intersections that are over-congested – regardless of CLV. Therefore, if it can be shown that the intersection is over-congested, the only rational response is to apply a delay-based methodology. As stated earlier, Chair Anderson testified public many times during the 2016-2020 SSP process that the Planning Department Staff have the freedom and authority to ask applicants to perform a delay-based analysis for any intersection that they feel is warranted – even if the CLV is below 1,600.

2. Definition of "Over-Congested"
   It is important to explain the definition of "over-congested" in transportation engineering. The congestion level of an intersection is determined by the volume-demand-to-capacity ratio (v/c). This term, v/c, is a measure that reflects mobility and quality of travel. For intersections, it compares the particular intersection's demand (volume of vehicles trying to utilize the intersection) with the intersection's supply (volume of vehicles that can get through the intersection). For example, a v/c of 1.00 indicates the intersection is operating exactly at its capacity level - the threshold between uncongested and over-congested. When intersections become over-congested, there are too many vehicles trying to use it, and the intersection doesn't have sufficient carrying capacity. So what happens? The approaches to the intersection begin to back-up and queues form on the roadways feeding the over-congested intersection, increasing the time it for a vehicle to navigate the approach, and enter/exit the intersection. Summarizing - an under-congested intersection can handle additional vehicle volume without creating back-ups on the approaching roadways, while an over-congested intersections cannot.

3. Data Corroborates that Fernwood & Democracy is Over-Congested
   Data from the INRIX database, provided by the Functional Planning Group at the Planning Department [6] supports this testimony's assertion that Fernwood & Democracy is over-congested. The data shows that over the last four years, the travel time on the intersection's approach has increased significantly, while the volume within the intersection has remained fairly constant. If the intersection was under-congested, as claimed by the Applicant and Planning Department, than the observation would be the exact opposite. That is, the volume within the

intersection would increase (because there was excess capacity in the intersection), and the travel time on the approach would be constant.

Refer to Figure 5, which displays the Time Travel Index (TTI) for northbound Fernwood (between Bradley and Democracy Boulevards) versus the time of day. For reference purposes, the right-hand side of Figure 5 also displays the historical "existing" PM CLV data for this intersection: that is, before pipeline or site-generated traffic is included. The TTI is the ratio of the average vehicle speed at the specified time, relative to the "free-flow" speed, which is the fastest recorded speed for the same segment. A TTI of 1.0 means the vehicle is traveling at the free-flow speed, while a TTI of 2.0 indicates that the vehicle is traveling at half the free-flow speed (i.e., it takes twice as long). The data shown is an average over the month of October – for 2012 and 2016. Figure 5 clearly shows a peak in TTI on northbound Fernwood during the even rush hour at 5:00 PM. The important point here is the >30% increase in peak TTI from 2012 to 2016 (the TTI increased from 1.45 to 1.95). ***The only rational and scientific conclusion from these observations is that the intersection is over-congested during the evening rush hour, and it's been getting worse over the last 4 years – even when the CLV has been in the range of 1,200-1,300.***

In summary, the time travel index data, in conjunction with historical CLV data, substantiate the fact the Fernwood & Democracy intersection is over-congested. In accordance with the stated intent of the LATR Guidelines, the Applicant should be expected to perform a delay-based analysis of this intersection – and that this is within the authority of the Planning Department Staff, according to Chair Anderson. Unfortunately, the Planning Department Staff have continued to refuse to request a delay-based analysis by the Applicant. However, in a joint meeting between community groups and the Planning Department in January 2017, the Functional Planning Group agreed to perform such an analysis. It is rumored that the analysis was completed as early as February 2017, but the results have not been released as of yet, despite multiple requests from the community groups.

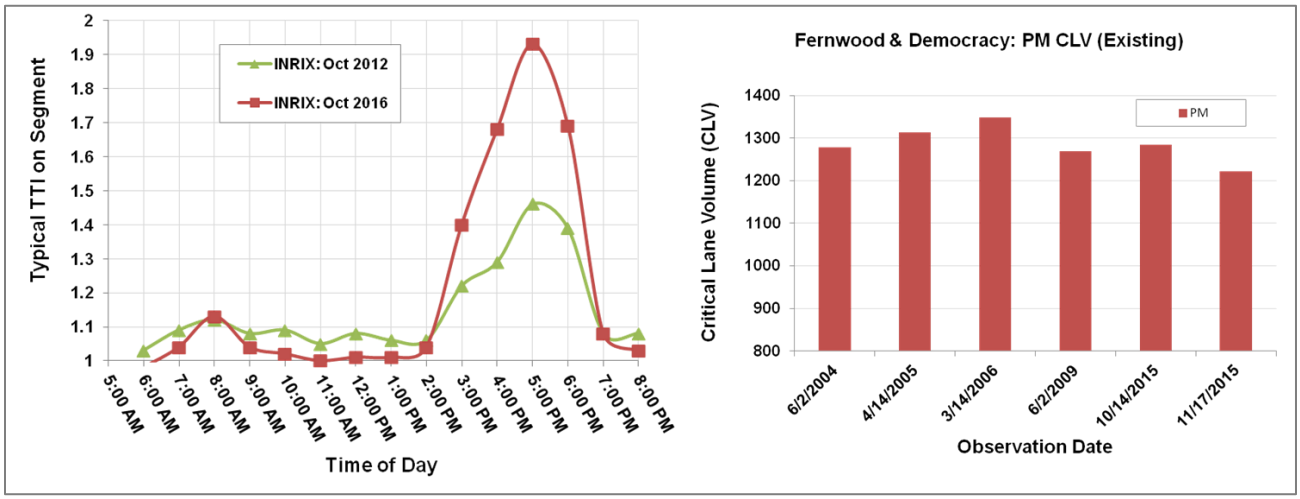

Figure 5: Time Travel Index (TTI) for Northbound Fernwood Road [6], Historical "Existing" PM CLV Values [4]

Conclusion

This testimony summarizes five issues that impact the Applicant's adequacy assessment of the intersection of Fernwood Road and Democracy Boulevard. As executed in the Applicant's LATR, the intersection passes the SSP adequacy test by the smallest of margins, easily less than normal day-to-day variations. With this in mind, together with the above shortfalls of the Applicant's assessment, and the Planning Department's unwillingness to exercise reasonable discretion, the Board should find that the proposed development cannot be supported by the existing infrastructure – and that the Applicant should be directed to mitigate site-generated traffic in accordance with the Subdivision Staging Policy.

References

[1] *WMAL Property Local Area Transportation Review and Transportation Policy Area Review*, Oct 2016, Wells & Associates.

[2] *2012-2016 Subdivision Staging Policy*.

[3] LATR-TPAR Guidelines, Montgomery County Planning Department.

[4] Online Intersection Analysis Tool, http://www.mcatlas.org/Intersections/.

[5] *Suburban Hospital Expansion Local Area Transportation Review and Policy Area Mobility Review*,October 18, 2012, Wells & Associates.

[6] Time Travel Index Averages, INRIX (provided by Montgomery County Planning Department).

[7] *Rock Spring Master Plan: Public Hearing Draft*, Montgomery County Planning Department, October 2016.