MEMORANDUM

To: Councilmembers

From: Marc Elrich
Valerie Ervin
Nancy Navarro
Hans Riemer

Re: ZTA 12-07, Special Exceptions – Automobile Filling Station

Date: July 19, 2012

We would like to provide additional information that goes beyond the recent PHED Committee discussion, which resulted in a 2-1 recommendation against approving ZTA 12-07. We ask you to consider supporting the ZTA and would also like to propose amendments, discussed later in this memo.

Jeff Zyontz's memo for the PHED Committee discussion on ZTA 12-07 provides a clear discussion of the rational basis and precedents for the Council's authority to adopt additional regulations for "mega gas stations" (the memo is available at http://www6.montgomerycountymd.gov/content/council/pdf/agenda/cm/2012/120709/20120709_PHED1.pdf). Among the main points are the following:

The siting of gas stations and their potential effects on public health. The memo points out that the source of all zoning authority is the power to protect the health, safety, and welfare of a community, and while scientific studies can be the foundation for regulatory changes, they are not a requirement. "The standard for regulation is that there must be a rational basis; the decision must not be arbitrary or capricious…There is broad legislative latitude on what is required to maintain and enhance public health. The basis of zoning regulation can be (and mostly is based on) the general welfare, which is a broader concept than health." (p.7).

The science. Although scientific studies of air pollution do not provide conclusive and irrefutable scientific evidence of adverse public health effects from mega gas stations, numerous studies of car exhaust, idling, emissions from gas station pumps and delivery trucks, and inherent characteristics of gas stations have raised red flags. The State of Maryland has equipment-based regulations for gas stations, and the EPA and California have guidelines for siting large gas stations, defined as those delivering 3.6 million gallons or more per year (pp. 6-7). Additionally, a letter dated July 10, 2012 from the Maryland Department of the Environment states that, given the number of petroleum based toxic air pollutants emitted from gas stations, "the more distance that can be placed between a source and residences and community gathering places is certainly beneficial to minimizing risks." Please see the attached addendum for some of the scientific information that supports this view. *The co-sponsors of ZTA 12-07 believe that there is enough science to provide a rational basis for concluding that the increased concentrations of air pollutants from mega gas stations may have a proportionately larger adverse effect on public health.*

The timeliness of the issue. The special exception language regarding gas stations was written in 1953, at a time when small, local neighborhood gas stations were the norm. The gas station business changed in the early 1990's, when the mega station first appeared on the scene. These stations are vastly different

from those we sought to regulate in 1953 because of the extremely high volume of gasoline they pump each year – up to 10 times the volume of small stations and more than 3 times the volume of the County's largest stations. (pp. 2-4). The co-sponsors are not aware of any mega gas stations in Montgomery County at this time. There has been some discussion about a "W Express" located at 20510 Frederick Road in Germantown, across the street from Neelsville Middle School. From what we have been able to learn, the station pumps about 3 million+ gallons a year, which puts it near the high end of gas stations in the County, but not as large as a mega gas station. It appears that the nearest pump is 800' from the school building and about 500' from three ball fields. The EPA's school siting guidelines, released in October 2011 recommend "detailed screening to evaluate potential hazards" when gas stations pumping more than 3.6 million gallons per year locate within 1,000 feet of schools. Even if this gas station exceeds those guidelines, and even if the guidelines had been in place when it was approved for that location, we cannot expect the Board of Appeals (or opponents of a mega-gas station), to be aware of national recommendations. However, now that the Council is aware of them, we should give the Board the additional guidance they need when considering the siting of these large stations. There are instances where past Councils have determined that minimum setbacks or buffers are needed for certain land uses, even when these uses are subject to approval by the Board of Appeals (airstrips, adult entertainment businesses, and car washes, for example – none of which have the serious health consequences we might expect from mega gas stations). There are also numerous instances where past Councils have determined that a particular *use* should be regulated differently depending on its size (p. 3).

The special exception process. Much has been said about the special exception process being able to address the health issues that concern the co-sponsors of ZTA 12-07. *We believe that the current process is not equipped to deal with the issue of the adverse health effects of mega gas stations.* According to Jeff's memo to the PHED Committee, *"All special exceptions start with a presumption that the use is a compatible use."* (p. 2, emphasis added). In other words, the burden of proof is on those in opposition to an application, usually nearby residents with limited or no access to the experts and other resources available to the applicants.

Although the Board of Appeals can consider "non-inherent effects" – those specific to a particular location and operation – Board members do not have the expertise to make a determination on health effects other than weighing what is presented to them by the "experts" who testify on behalf of applicants or those in opposition. In fact, the County's Department of Health and Human Services and Department of Environment, when asked to comment on ZTA 12-07 and the health effects of gas stations on people at gathering places near the station, responded to Council President Berliner by saying "…both departments deemed that we did not have the breadth of knowledge necessary to weigh the merits of the claims made in the Sullivan report or other documents provided to Council." This raises a concern stated by Jeff: Is the Council putting the Board of Appeals in the untenable position of having to judge health claims in special exceptions when two science-based County departments do not have the breadth of knowledge necessary to weigh the merits of the claims?

The co-sponsors of ZTA 12-07 do not believe that the Board of Appeals has been given sufficient guidance to make a decision for or against the possible adverse health effects of mega gas stations. ZTA 12-07 can provide that additional guidance by establishing a buffer not only for schools but for other land uses where outdoor activity (and exposure) may increase risks to public health.

The broader public health and general welfare assessment. When weighing our responsibilities in this area, we should consider the July 10, 2012 letter from the Maryland Department of the Environment (a copy is attached to this memo). It points out that the regulatory approach for gas stations "dates back to a time when the typical urban gasoline station had several pumps and a million gallons or two of sales yearly." It goes on to say that for gas stations dispensing 3.6 million gallons of gasoline per year, the California Air Resources Board (CARB) recommends a 300-foot buffer between the gasoline stations and schools, and larger stations would conceivably warrant a larger setback. According to MDE, "these documents [CARB and EPA's School Siting Guidelines] . . . provide meaningful guidance to decision

makers" and "if there is an opportunity to move a new source, particularly one that is related to mobile sources, away from heavily populated areas it would serve to minimize the potential of adding any risk to what already exists."

The last thought is particularly noteworthy. We already know that there is considerable background air pollution, that there are toxins all around us with public health effects. But in this instance, we have evidence that a particular land use located near people engaged in outdoor activity can increase those risks, and we have the opportunity to do something about it. If you agree that there are sufficient public health and general welfare concerns that warrant some changes, we hope you will agree that it is the Council's role to establish additional guidelines for mega stations.

Amendments to the ZTA:
We mentioned at the beginning of this memo that we would like to propose amendments to the ZTA. Our proposed changes are in **bold** and would add daycare centers and clarify that the covered uses are outdoor:

After {effective date}, a new automobile filling station designed to dispense more than 3.6 million gallons per year must be located at least 1,000 feet from any public or private school, park, playground, **day care center, any outdoor public use or any outdoor cultural, entertainment, or recreation use.**

ZTA 12-07 is *not* about one particular neighborhood opposed to one particular mega gas station. Although the proposed Costco gas station in Wheaton Regional Mall brought this issue to the forefront, there are countywide implications for how we deal with mega gas stations, which are becoming more and more the preferred size for the industry. We are not proposing an outright ban of mega gas stations in Montgomery County; we are asking for additional standards that would allow the Board of Appeals' special exception process to establish a buffer zone to address the possible effects of this pollution on nearby populations, particularly those engaging in outdoor activities in close proximity to the pollution source.

Attachment to Memo re: ZTA 12-07, Special Exceptions – Automobile Filling Station, 7/19/12

Public Health Concerns

Below is some of the most relevant information that we believe raises the issue of mega-gas stations as a public health concern.

Maryland Department of the Environment:

Since the PHED committee worksession, we have received a letter from the Deputy Director of Air and Radiation Management Administration (which is attached to this memo). This letter includes the following points:

- Assessing scientific risk is difficult and standards vary. Scientific assessments predict cancer risk (and those predictions are only as good as their inputs) and different agencies accept different levels of risk
- Cumulative impacts are of concern. The letter explains that the EPA "has looked at the broad issue of cumulative impacts..." and these results show that "risk from mobile source related emissions does exist; so, again, if there is an opportunity to move a new source, particularly one that is related to mobile sources, away from heavily populated areas it would serve to minimize the potential of adding any risk to what already exists."
- Distance matters in size of stations. The letter also points out that EPA's and California's guidance "does support the concept that distance can play a role in reducing potential exposure..Larger stations [more than 3.6 million] would conceivably warrant a larger setback [than the 300 foot buffer recommended for 3.6 million].
- Minimize harm: "Although these documents [from EPA and California Air Resources Board] are not binding, they do provide meaningful guidance to decision makers interested in taking the opportunity to factor in environmental concerns and minimizing environmental harm into the decision making process."

Peer-reviewed scientific literature raises public health concern:

Emissions from benzene (a known carcinogen) at large gas stations combined with car exhaust:
Although extensive searches have not identified studies that looked at the effects of lines of idling cars combined with the effects of benzene, at gas stations, we have found studies that give a good indication of the health concerns from car exhaust *and* from benzene at filling stations.
The California study reviewing air pollution at and near gas stations (discussed in more detail below) is focused on benzene emissions from the dispensing, delivery and storage of gasoline. It does not address the tailpipe emissions of the cars filling up with gas. Consequently, we looked at studies regarding traffic-related air pollution to give a sense of the impact of idling cars. Again, we are concerned about the combined effects of long lines of idling cars and benzene-related concerns at gas pumps and stations.

What does idling do?
Excessive idling causes an unnecessary release of air contaminants into the air, including fine particulates and air toxics. [1]
Doesn't the EPA set air standards to protect public health?
Unfortunately, it's complicated. The EPA does have air quality standards, and air quality in the region is measured and reported, but it doesn't mean that the air quality is good. The EPA does not

[1] . (Source: From NJ Department of Environmental Protection: http://www.nj.gov/dep/enforcement/idling_fact_sheet_1.pdf

review local air quality - the standard is for the region, which includes Washington, DC, and multiple counties in Virginia and Maryland. In fact, according to the Metropolitan Washington Council on Governments, "the Washington region is a non-attainment area for ground-level ozone and PM 2.5 according to federal health standards." [2]

What is the impact of traffic-related air pollution?

Health Effects Institute: "Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects"

One of the EPA's experts on near-roadways air pollution referred us to a January 2010 report by the Health Effects Institute, "Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects". He characterized the report as a good one because it summarizes hundreds of studies and analyzed the existing data and evidence. The review panel for the report represented a broad range of scientists and medical professionals. Numerous reports were excluded from their conclusions because of insufficient data or other concerns.

Some of the report's findings that are most relevant to this ZTA:

- Traffic-related air pollution has a causal relationship with exacerbating asthma: ". [U]sing rigorous criteria to assess cause and effect, the Panel concluded that the evidence is sufficient to support a causal relationship between exposure to traffic-related air pollution and exacerbation of asthma among children". [Please note: Scientists using the statement "support a causal relationship" is an extremely strong statement.]
- Traffic-related air pollution may cause asthma, impaired lung function and heart disease. "The Panel also found suggestive evidence of a causal relationship with onset of childhood asthma, non-asthma respiratory symptoms, impaired lung function, total and cardiovascular mortality, and cardiovascular morbidity, although the data were not sufficient to support causality."
- Distance from traffic matters. "Based on a synthesis of the best available evidence, the Panel identified an exposure zone within a range of up to 300 to 500 *meters* [984 to 1640 feet] from a highway or a major road as the area most highly affected by traffic emissions and estimated that 30% to 45% of people living in large North American cities live within such zones."
- Traffic-related air pollution is a public health concern. "In light of the large number of people residing within 300 to 500 *meters* [984 to 1640 feet] of major roads, the Panel concluded that the sufficient and suggestive evidence for these health concerns indicates that exposures to traffic-related pollution are likely to be of public health concern and deserve public attention." [3]

California Air Resources Board: Air Quality and Land Use Handbook: A Community Health Perspective, April 2005.

Recommendations and standards in this report were the basis for the EPA's attention to mega-gas stations in its school-siting report (see below for more on the EPA report). The report discusses both gasoline dispensing facilities and exposure from freeways and high-traffic roads. [4]

- Large gasoline dispensing facilities and benzene pose a health risk. "While gasoline-dispensing facilities account for a small part of total benzene emissions, near source

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[2] http://www.mwcog.org/environment/air/

[3] Health Effects Institute, Traffic-Related Air Pollution: A Critical Review of the Literatureon Emissions, Exposure, and Health Effects, HEI Panel on the Health Effects of Traffic-Related Air Pollution, p.xv http://pubs.healtheffects.org/getfile.php?u=553

[4] Air Quality and Land Use Handbook: A Community Health Perspective, April 2005, California Environmental Protection Agency, California Air Resources Board, pp. 8-9, 30, 32, http://www.arb.ca.gov/ch/handbook.pdf

exposures for large facilities can be significant." The report states that despite the implementation of emissions controls on motor vehicle vapor recovery equipment at gas stations and a reduction in benzene levels in gasoline, "benzene levels are still significant." The report recommends "avoid siting new sensitive land uses within 300 feet of a large gasoline dispensing facility (defined as a facility with a throughput of 3.6 million gallons per year or greater)."

- Freeways and High Traffic Roads exposure increases cancer risk. "...the association of traffic-related emissions with adverse health effects was seen within 1000 feet and was strongest within 300 feet. This demonstrates that the adverse effects diminished with distance. In addition to the respiratory health effects in children, proximity to freeways increases potential cancer risk and contributes to total particulate matter exposure. There are three carcinogenic toxic air contaminants that constitute the majority of the known health risk from motor vehicle traffic - diesel particulate matter (diesel PM) from trucks, and benzene and 1,3-butadiene from passenger vehicles."

EPA School Siting Guidelines[5]

- A large gas station within 1000 feet is cause for concern. The guidelines recommend reviewing and evaluating schools that would be located within 1000 feet of large gas stations that dispense more than 3.6 million gallons per year. "[E]stablishment of a buffer or exclusion zone is not appropriate at the national level but "this should not be construed as a criticism of those jurisdictions that have adopted or are applying buffer or exclusion zones as a useful tool."
- Traffic emissions are a cause for concern. "Recent research has demonstrated a link between exposures to air pollutants from traffic emissions near large roadways and adverse health effects." The report recommends a "screening perimeter" for all high-traffic roads within about a half mile and roads further away "with a high likelihood of accidental releases."

Other scientific findings and comments:

- Automobile exhaust is listed as one of the "Top Ten Toxic Chemicals Suspected to Cause Autism and Learning Disabilities" by the Mount Sinai Children's Environmental Health Center.[6]
- [R]esearchers found that breathing levels of traffic-related particles were linked to increased risk of stroke within 12 to 14 hours of breathing them."[7]
- "Short-term exposure to particle pollution [one of the components of car exhaust] can kill. Peaks or spikes in particle pollution can last for hours to days. Deaths can occur on the very day that particle levels or high, or within one to two months afterward. Particle pollution does not just make people die a few days earlier than they might otherwise - these are deaths that would not have occurred if the air were cleaner."[8]
- "Exposure from tailpipe emissions from motor vehicles potentially carries chronic health risks to children's lung development," said lead researcher W. James Gauderman." Dr. Gauderman led a "study that is the first to show that long exposure to car and truck exhaust actually affects the growth of the lungs, and hence their capacity."[9]

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[5] EPA School Siting Guidelines pp. 57, 59, 118, 135 http://www.epa.gov/schools/siting

[6] http://www.mssm.edu/departments-and-institutes/preventive-medicine/about-us/news/mount-sinai-childrens-environmental-health-center-publishes-a-list-of-the-top-ten-toxic-chemicals-suspected-to-cause-autism-and-learning-disabilities

[7] American Lung Association, State of the Air 2012, pg. 27

[8] American Lung Association, State of the Air 2012, p. 32

[9] http://www.medicineonline.com/news/12/7806/Living-Near-Freeways-Hurts-Kids-Lungs.html

- "Will there be more particulates with gas stations? Of course. It's a source, and it's additive."[10]
- Short-term exposure to fine particulates [one of the components of car exhaust] "significantly increases the risk for cardiovascular and respiratory disease" for people over 65, according to a study from John Hopkins University.[11]
- "'There is real cause for concern,'" says neurochemist Annette Kirshner at the National Institute of Environmental Health." about the impact of traffic exhaust on human health. "There are more and more scientists trying to find whether and why exposure to traffic exhaust can damage the human brain,' says medical epidemiologist Jiu-Chiuan Chen at the University of Southern California.'The human data are very new.'"[12]
- "EPA estimates that vehicle emissions account for as many as half of all cancers attributed to outdoor air pollution.[13]
- Monitoring air quality is complicated. "Air quality varies across space and time, and is dependent upon climatic conditions. It is poorest, but may not be monitored, where traffic is most intense, normally where highways slow near urban areas.and where trucks, buses and cars tend to concentrate and idle." [14]
- Children are at particular risk from particle pollution [emitted from vehicle exhaust] exposure both because their lungs are growing and because they are so active.[15]
- "Children are more sensitive to air pollution because they breathe 50 percent more air per pound of body weight than adults."[16]
- "Research into the health risks of 65,000 women over age 50 found that those who lived in areas with higher levels of particle pollution [a component of vehicle exhaust] faced a much greater risk of dying from heart disease than had been previously estimated. Even women who lived within the same city faced differing risks depending on the annual levels of pollution in their neighborhood."[17]
- If two sides could agree on modeling – both the assumptions in the model and the model used, they "bracket the risk, but then you're hearing the debate today over what's the acceptable risk? Agreeing on a model doesn't answer that question."[18]
- "Until the most harmful agents are identified, the only practical manner to potentially reduce health consequences would be to reduce overall traffic and related emissions…such that there is greater separation between the people and the source…."[19]

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[10] David Sullivan, Sullivan Environmental Consulting, Statement at PHED committee worksession on ZTA 12-07, 7/9/12

[11] http://www.niehs.nih.gov/research/supported/sep/2006/pmcardio/

[12] The Hidden Toll of Traffic Jams," Wall Street Journal, 11/8/11

[13] "The Harmful Effects of Vehicle Exhaust," Environmental and Human Health Inc., p. 10 http://www.ehhi.org/reports/exhaust/exhaust06.pdf

[14]("The Harmful Effects of Vehicle Exhaust," Environmental and Human Health Inc., p. 11 http://www.ehhi.org/reports/exhaust/exhaust06.pdf

[15] "Ambient Air Pollution: Health Hazards to Children, Pediatrics, 2004

[16] Dr. Marilyn Crumpton, Cincinnati Health Department

[17] American Lung Association, State of the Air 2012, p.33

[18] Bob Hoyt, Director, Department of Environmental Protection, Montgomery County during PHED committee worksession on ZTA 12-07, 7/9/12 Director

[19] "Particulate Matter Air Pollution and Cardiovascular Disease. An Update to the Scientific Statement from the American Heart Association. 6/1/10, p. 2335-2336.

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July 10, 2012

Larry J. Silverman, Esq.
7308 Birch Avenue
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Dear Mr. Silverman:

This is in follow up to our meeting in June wherein we discussed the proposed gasoline station at a Costco store in Wheaton. Since the meeting we have given some thought to the issues you raised and hereby offer a few comments that are pertinent to the matter.

As stated at the meeting, all gasoline stations are regulated uniformly regardless of size or location and are required to install and maintain specific pollution capturing equipment. This regulatory approach dates back to a time when the typical urban gasoline station had several pumps and a million gallons or two of sales yearly. Although there has been an industry shift to larger stations with sixteen or more pumps and up to twelve million gallons per year of product sales, Maryland has not changed its regulatory scheme at this time. This is not to say that a gasoline station, once permitted, poses zero risk to the public. There are a number of petroleum based toxic air pollutants that are emitted from gasoline stations that pose some level of risk to public health from the delivery and dispensing of fuel and the idling of vehicles. The difficulties are quantifying that risk, especially the incremental risk beyond existing levels, and determining what risk level is acceptable. A further complication is that available tools do not capture very well the cumulative effects of multiple toxic air pollutants or the incremental effect a single pollutant from multiple sources may have on public health. Given these issues and those mentioned later, the more distance that can be placed between a source and residences and community gathering places is certainly beneficial to minimizing risk.

In terms of quantifying risk, the first step is to determine the maximum ground-level concentration of a pollutant. This can be done through the use of mathematical models that estimate how air disperses as it moves away from an emission source. The maximum concentration can then be used to determine cancer risk and non-cancer risk associated with a particular pollutant. Models have their limitations, in that their accuracy is only as good as the inputs used. In the case of gasoline stations and other ground-level sources, the models often do not have available for input meteorological data that closely represent long-term conditions at or near the site. More general data are used, which can affect the accuracy of the model. Local topographical features that can affect model results are also not always well represented. Assumptions regarding emission rates from a source can also vary widely, especially when the sources are, in the case of gasoline stations, idling vehicles, which can emit at different levels

I hope the information above helps in some way to inform the issue for you. If you have any questions, please do not hesitate to contact me at 410-537-3260.

Sincerely,

Angelo Bianca

Angelo Bianca, Deputy Director
Air and Radiation Management Administration

cc: Robert M. Summers, Maryland Secretary of the Environment