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Written Testimony

1. **As required by the regulations governing DOEE's review under the DC Environmental Policy Act, attached, DDOE is required to assess the health impacts of proposed actions, noise impacts, and cumulative impacts.**

There should be an assessment of the health impacts of the development on local populations, those populations that reside, work, play, or pray near the proposed development. The current EA is not in compliance because it has not included public health impacts. I suggest that a health impact assessment is performed. There needs to be baseline data collected on local hazards, pollution, sociodemographics, and health status. I suggest that analyses should be performed in a five block radius, 10 block radius, and 25 block radius around the proposed develop to capture populations particularly vulnerable groups that will be impacted by pollution particularly air pollution associated with the development. The use of ward level, city-wide, or regional data is not relevant or applicable to populations that are in close proximity to the proposed development.

Health Impact Assessment (HIA) is a tool that is designed to support decision and policymaking. HIA combines array of data sources, analytic methods and input from stakeholders including community members to determine if a proposed policy, plan, program, and/or decision has the potential to impact the health of the community, and how these effects are distributed within population subgroups that differ by geography, SES, and demographic characteristics [9]. This information is then fed back to the policymakers to help them make an informed decision on the pending policy, plan, program and/or decision. HIA is not a quantitative risk assessment, rather it provides information that is qualitative in nature that can be used to assess whether and how community wellbeing may be impacted, both directly and indirectly.
It consists of 6 steps: 1. Screening: Initial step to determine the need for HIA. 2. Scoping: With community input, identify the most important hazard and health impact to focus on. 3. Assessment: Analyze the baseline characteristics of the population and provide anticipated potential effects. 4. Recommendations: Based on the assessment, develop recommendations for minimizing health effects, and approaches for monitoring. 5. Reporting: Prepare a report for the decision makers, disseminate the findings and recommendations to all the stakeholders including community members. 6. Monitoring and Evaluation of the HIA Process: Evaluate if the HIA process helped the decision-making process.

2. **DOEE's examination only of pollutants for which DC is in attainment fails to approach this analysis from a public health impact (as distinct from an air quality impact) perspective, even though DC's regulations require consideration of human health impacts.**

The fact that DC is in attainment for several criteria air pollutants is irrelevant. It is barely in attainment for particulate matter and is not in attainment for ozone. The attainment status is for DC, not for the site specific area that will be impacted by the development. You need to perform an analysis to assess impacts particularly traffic related impacts on the local population. This is why a hot-spot analysis is needed for all combustion related emissions resulting from increased traffic close to a residential neighborhood and other sensitive receptor sites including schools, day care centers, senior centers, Howard University (college students) and most importantly populations who are ill and/or with comorbidities or underlying social or economic vulnerabilities who seek care at the multiple hospitals near the proposed development. There are five hospitals near the area that could be impacted by traffic-related air pollution: Children's Hospital, Veteran's Hospital, MedStar, Washington Hospital, and Howard U Hospital.

3. **The point of an EA is to assess the totality of a project's impacts, even if those impacts as a substantive matter are regulated by another agency. The EA's conclusion that the project does not have a significant impact is undermined when relevant impacts are omitted from the EA or not addressed simply because they are under another agency's jurisdiction (i.e., the DC Department of Health).**

It is important for the EA to be updated to assess cumulative impacts of both chemical, and non-chemical stressors including noise, psychosocial stressors, and other social determinants. The agency should work with the health department to develop a cumulative risk assessment.

Conventional risk assessment methods were designed to assist regulators and risk managers in addressing threats resulting from a single chemical or source to a hypothetical individual, instead of a population. This approach fails to account for the fact that exposures do not happen in a vacuum, and that individuals are simultaneously exposed to multiple chemical, biological and physical hazards as well as psychosocial stressors. This shortcoming of traditional risk assessment has given rise to cumulative risk assessment (CRA) or community-based risk assessment approaches. Cumulative risk is the combined risk from aggregate exposures from all relevant routes, to multiple hazards or stressors, including chemical, biological, physical and psychosocial stressors. Under this framework, the CRA is divided into 3 distinct phases: 1) planning and scoping and problem formulation, 2) analysis phase, and 3) risk estimation and characterization. In this approach, the impacted community is the central focus, instead of a specific chemical or the source. CRA is a tool for organizing and analyzing information to examine, characterize and possibly quantify the combined adverse human health effects from multiple stressors. The scoping process allows engagement of stakeholders, particularly impacted community members, from the onset. This process helps to identify concerns that are of high priority to the impacted community. As such, it is a useful tool for a community that is being impacted by new development. CRA is often not quantitative like conventional risk assessment. This is because CRA deals with the combined effects of multiple hazards (chemical, physical, and biological) and psychosocial stressors, and calculating specific risk, including interactions among various mixtures/stressors is methodologically complex. Although there has been some advancement made in terms of aggregate exposure and dealing with hazards that have common mechanisms of toxicity, similar modes of action, or have common target organs, there are no clear approaches to deal with interactions between multiple stressors, particularly non- chemical stressors such as psychosocial stress from loss of property value, loss of community identity, family conflict, poverty, unemployment, lack of access to amenities, unsafe community conditions and working environments, limited access to healthcare resources, discrimination, residential crowding, street crime, traffic congestion and other circumstances, on risk.

Air Pollution and Human Health

- There are **more than 45 million people in the United States living, working, or attending school within 100 meters/yards of a major road, airport or railroad** (USEPA)
- In January 2010, the Health Effects Institute published a major review of the evidence by a panel of expert scientists. The panel looked at over 700 studies from around the world, examining the health effects. **The area most affected, they concluded, was roughly 0.2 to 0.3 miles (300 to 500 meters) from the highway.** [1]
- **The number of people living "next to a busy road" may include 30 to 45 percent of the urban population in North America**, according to the most recent review of the evidence. (TRB News 2015)
- **In the U.S. alone, 200 million people live in areas where pollutants such as ozone and fine particulate matter exceed the standards. (Mexico City Study)**

Health Effects Institute Panel on the Health Effects of Traffic-Related Air Pollution, *Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects.* Health Effects Institute: Boston, 2010. Available at www.healtheffects.org

- One in six people in the United States lives in an area with unhealthy year-round levels of fine particle pollution (termed annual average levels). More live in areas where levels are higher on a seasonal basis due to air/temp patterns or other. **Roughly 3 in 10 Americans live in counties with unhealthful spikes of particle pollution which can last from hours to days (termed 24-hour levels)**.
- **Six out of ten Americans -- 186.1 million people -- live in areas where air pollution levels endanger lives, according to a new report listing cities with high and low pollution levels. Nearly every major U.S. city is still burdened by significant amounts of air pollution.** "When 60 percent of Americans are left breathing air dirty enough to send people to the emergency room, to shape how kids' lungs develop, and to kill, air pollution remains a serious problem."
- **Fifty-eight percent of people in the United States live in counties with recorded unhealthy levels of ozone air pollution, measured against the tighter standard in effect since March 2008. The new standard showed that unhealthy ozone levels are more widespread and more severe than**

previously recognized. Ozone is the most widespread form of air pollution. When inhaled, ozone irritates the lungs, resulting in something like a bad sunburn. The health effects of breathing ozone pollution can be immediate. Ozone can cause wheezing, coughing and asthma attacks. Breathing ozone pollution can even shorten lives.

- **"More than 175 million Americans live in areas with unhealthy smog levels**—that's 80 million more than we identified in last year's report," explained Charles D. Connor, American Lung Association President and CEO. "We at the American Lung Association believe that the new ozone standard is not yet strong enough to protect human health—an opinion nearly all scientific experts share."
- Previous studies have focused on the young, the elderly, and those with asthma or diabetes, but recent research shows that young people in the prime of life have brain alterations/damage associated with air pollution, when they are entirely healthy, otherwise. Still, "air pollution worsens asthma and is a direct cause of heart attacks, which makes people living with lung and heart disease especially vulnerable."
- Emerging research has redefined the severity and immediate health impacts of particle pollution and ozone, as well as an expanded definition of specific groups at great risk. New data show that **women in their 50s may be particularly threatened by air pollution, that women of reproductive age (and their fertility) are affected by air pollution, and that working age people such as diesel truck drivers and dockworkers who are forced to breathe exhaust on the job face a greater risk of developing lung cancer or chronic obstructive pulmonary disease**. As a result, **California researchers have tripled their estimate of the number of people that particle pollution kills each year in their state**.
- **"The science is rock-solid. We now know that air pollution can impair the lung function of even the healthiest people,"** said Norman H. Edelman, MD, American Lung Association Chief Medical Officer.
- **Low income people and some racial and ethnic groups often face greater risk from pollutants. Pollution sources like factories and power plants may be closer to their homes. Many live near areas with heavy highway traffic or have poor access to health care, which makes them even more vulnerable**. Some racial and ethnic groups have a higher prevalence of diseases like **asthma or diabetes, which compounds the ill effects of air pollution** for these groups.

The deaths currently associated with air pollution in these counts include those from lung cancer, chronic obstructive pulmonary disease (COPD) and respiratory infections.

UBC. "Poor air quality kills 5.5 million worldwide annually." ScienceDaily. 12 February 2016. www.sciencedaily.com/releases/2016/02/160212140912.htm.

"Particulate air pollution is like lead pollution; there is no evidence of a safe threshold even at levels far below (a third of) current standards"

A new study by researchers at the Harvard School of Public Health found that death rates among people over 65 are higher in zip codes with more fine particulate air pollution (PM2.5) than in those with lower levels of PM2.5, researchers have found. **The harmful effects from the particles were observed even in areas where concentrations were less than a third of the current standard set by the US EPA.**

It is the first study to examine the effect of soot particles in the air in the entire population of a region, including rural areas. The researchers used satellite data to determine particle levels and temperatures in every zip code in New England. This allowed them to examine the effects of PM2.5 on locations far from monitoring stations, and to look at the effects of short-term exposures and annual average exposures simultaneously. They **analyzed health data from everyone covered by Medicare in New England -- 2.4 million people -- between 2003 and 2008 and followed them each year until they died and found that both short- and long-term $PM_{2.5}$ exposure was significantly associated with higher death rates, even when restricted to zip codes and times with annual exposures below EPA standards.**

Liuhua Shi, Antonella Zanobetti, Itai Kloog, Brent A. Coull, Petros Koutrakis, Steven J. Melly, Joel D. Schwartz. **Low-Concentration PM2.5 and Mortality: Estimating Acute and Chronic Effects in a Population-Based Study**. *Environmental Health Perspectives*, 2015; DOI:10.1289/ehp.1409111

Harvard School of Public Health. "Air pollution below EPA standards linked with higher death rates." ScienceDaily. ScienceDaily, 4 June 2015. www.sciencedaily.com/releases/2015/06/150604100801.htm.

Traffic, Air Pollution, and Disparities

Those living or walking near exhaust sources, who tend to be lower income, suffer

Higher levels of nearby traffic increase exposure to air pollution and adversely affect health outcomes. Populations with lower socio-economic status (SES) are particularly vulnerable to stressors like air pollution. We investigated cumulative exposures and risks from traffic and from MNRiskS-modeled air pollution in multiple source categories across demographic groups. Exposures and risks, especially from on-road sources, were higher than the mean for minorities and low SES populations and lower than the mean for white and high SES populations. **Owning multiple vehicles and driving alone were linked to lower household exposures and risks. Those not owning a vehicle and walking or using transit had higher household exposures and risks. These results confirm for our study location that populations on the lower end of the socio-economic spectrum and minorities are disproportionately exposed to traffic and air pollution and at higher risk for adverse health outcomes. A major source of disparities appears to be the transportation infrastructure. Those outside the urban core had lower risks but drove more, while those living nearer the urban core tended to drive less but had higher exposures and risks from on-road sources.** We suggest policy considerations for addressing these inequities

Pratt, Greg et al. Traffic, Air Pollution, Minority and Socio-Economic Status: Addressing Inequities in Exposure and Risk http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4454972/ Am J Public Health. 2014 January; 104(1): 156–164.

Risks can increase sharply as traffic with gas and diesel-powered vehicles increases or rush hour or delay grows longer

Traffic congestion increases vehicle emissions and degrades ambient air quality, and recent studies have shown excess morbidity and mortality for drivers, commuters and individuals living near major roadways. Presently, our understanding of the air pollution impacts from congestion on roads is very limited. This study demonstrates an approach to characterize risks of traffic for on- and near-road populations. Simulation modeling was used to estimate on- and near-road NO2 concentrations and health risks for freeway and arterial scenarios attributable to traffic for different traffic volumes during rush hour periods. The modeling used emission factors from two different models (Comprehensive Modal Emissions Model and Motor Vehicle Emissions Factor Model version 6.2), an empirical traffic speed-volume relationship, the California Line Source Dispersion Model, an empirical NO2-NOx relationship, estimated travel time changes during congestion, and concentration-response relationships from the literature, which give emergency doctor visits, hospital admissions and mortality attributed to NO2 exposure. **An incremental analysis, which expresses the change in health risks for small increases in traffic volume, showed non-linear effects. For a freeway, "U" shaped trends of incremental risks were predicted for on-road populations, and incremental risks are flat at low traffic volumes for near-road populations. For an arterial road, incremental risks increased sharply for both on- and near-road populations as traffic increased. These patterns result from changes in emission factors, the NO2-NOx relationship, the travel delay for the on-road population, and the extended duration of rush hour for the near-road population.** This study suggests that health risks from congestion are potentially significant, and that additional traffic can significantly increase risks, depending on the type of road and other factors. Further, evaluations of risk associated with congestion must consider travel time, the duration of rush-hour, congestion-specific emission estimates, and uncertainties.

Zhang K[1], Batterman S. Air pollution and health risks due to vehicle traffic. Sci Total Environ. 2013 Apr 15;450-451:307-16. doi: 10.1016/j.scitotenv.2013.01.074. http://www.ncbi.nlm.nih.gov/pubmed/23500830

Environmental justice considerations in air pollution from traffic and health outcomes

Residential proximity to heavy traffic has been associated with adverse health effects, including asthma, reduced lung function, cardiac and pulmonary mortality, and adverse birth outcomes.1–3 Previous research suggests that non-White and lower income individuals may be exposed to higher levels of traffic-related air pollution4–8 and that disparities vary with social gradients associated with higher susceptibility to pollution.9,10 Environmental justice concerns are heightened in goods movement corridors in which substantial volumes of heavy-duty diesel trucks (HDDTs) transport shipping containers on arterials near residences and sensitive land uses through lower socioeconomic status communities.11,12

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