



# CITY OF HOUSTON

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*The following is testimony provided by Dr. Loren Raun, Chief Environmental Science Officer for the City of Houston, to the Texas Commission on Environmental Quality at their September 10, 2018 hearing in Houston in regards to the Draft Beneficiary Mitigation Plan for the Volkswagen settlement.*

“My name is Dr. Loren Raun. I am the Chief Environmental Science Officer for the City of Houston Health Department and a professor in the practice of statistics at Rice University, where I conduct research on air pollution and health in Houston.”

“I am here today to comment upon the Draft Beneficiary Mitigation Plan for Texas to be submitted to the Volkswagen Environmental Mitigation Trust. Our oral testimony today is in supplement to written comments that will be submitted from Mayor Turner to the TCEQ in the near future.”

“The mission of the Houston Health Department is to work in partnership with the community to promote and protect the health and social well-being of Houstonians. Likewise, the mission of the TCEQ is to protect our state's public health.”

“The topic today is allocation of funds to mitigate degradation of air quality. As you know, the overwhelming concern about poor air quality is the impact it has on the health of the community and the environment.”

“Therefore, we, the City of Houston and the Texas Commission on Environmental Quality, have a shared goal, given our missions, to utilize the funds in a way that most effectively protects the public from adverse health effects associated with poor air quality.”

“I appreciate this opportunity to explain why the draft plan will not achieve this goal—it will not effectively protect the public health of the state as it should. I will explain that the dollars are not optimized, that shifting the allocation to those most impacted regions would provide significantly more public health benefit per dollar.”

“The purpose of the Environmental Mitigation Trust Agreement for State Beneficiaries (“Trust Agreement”) is to provide funds to be used for environmental mitigation projects that reduce emissions of nitrogen oxides (‘NO<sub>x</sub>’) in areas where the Subject Vehicles with illegal defeat devices were, are, or will be operated.”

“In this draft plan, the funding allocations are not apportioned correctly. Nearly a quarter of subject vehicles with illegal defeat devices in Texas were registered in the Houston region— therefore, Houston should receive a quarter of the funds-- not the 13 percent the draft allocates. Not only were 25 percent of the vehicles registered here, but Houston has documented adverse health effects from the nitrogen oxides that were illegally emitted and significant costs.’

“The intent of the signatories of the Trust Agreements is for the funds in the Trust to be used in areas where harm has occurred, is occurring or will occur from these vehicles. Harm has, is and will continue to occur in Houston due to these vehicles.’

“And although mitigation of NO<sub>x</sub> in other areas not as high as Houston will reduce NO<sub>x</sub>, mitigation in these other areas will NOT reduce the health effects and the associated cost of health effects at the same rate as they would in Houston. Funds in Houston would go farther to meeting the goal.’

“This is because the risk of adverse health effects increases as:

- the number of days of unhealthy air pollution increases
- as the concentrations increase,
- as the population exposed to those elevated, cumulative unhealthy air pollution days increases.’

“The rate of effectiveness is dependent upon the number of days of unhealthy air pollution increases because if a region does not have many days of unhealthy air, reducing NO<sub>x</sub> will not effectively reduce adverse health effects for the state compared with reducing in impacted areas. Reducing the number of EPA Air Quality index days from the fair air quality to the good air quality level does not have the same impact as reducing from the unhealthy to fair level.’

“The rate of effectiveness is dependent upon how high the concentrations are, at the upper end, in high concentrations, the dose response relationship between air pollution and health effects is not linear, reducing the high end concentrations has a bigger impact than reducing from moderate to low, if a region does not experience the highest levels, reducing in that region will not be as effective as reducing in regions that have high concentration levels.’

“Finally, the rate of effectiveness is dependent upon how large the population is which is exposed to those elevated, cumulative unhealthy air pollution days.’

“No other city in the state is as large as Houston. In fact, Houston is the fourth largest city in the United States. Reduction of air pollution here will benefit the most people. The Houston region has nearly 7 million residents who face the public health consequences for poor air quality.’

“Regarding NO<sub>x</sub> air pollution health effects, Houston has significant health consequences tied directly back to nitrogen oxide:

- Nitrogen dioxide has been linked directly to increased risk of an asthma attack requiring ambulance treatment in Houston. There were 18, 587 ambulance-treated asthma attacks since 2004, about 1500 per year. 15% of the year, NO<sub>2</sub> poses a 30% increased risk of an asthma attack in Houston.

- Nitrogen dioxide is a component of the formation of ozone. Ozone has been linked directly to an increased risk of asthma attack. 5% of the year, cumulative exposure over three days of ozone pose a 15% increased risk of an asthma attack in Houston.
- Houston is burdened with pollution triggered costs of asthma. Ambulance fees, hospital costs, missed work and school time. And, when an ambulance is treating an asthma attack, it is not available for other acute events putting other Houstonians at risk.
- There are school zones in Houston where children are 6 times more likely to need an ambulance for an asthma attack than the rest of Houston. These children are from disadvantaged, socio economically challenges areas. Reducing pollution would reduce this burden on children.
- Ozone has also been linked to cardiac arrest in Houston.
- Finally, Formaldehyde formation is a function of nitrogen oxides. Formaldehyde is a cancer causing hazardous air pollutant. EPA's National Air Toxic Assessment indicates formaldehyde is posing a significant increase in cancer risk in Houston neighborhoods.'

“Houston continues to be in non-attainment of the ozone standard. The current ozone design value in Houston is 78 ppb, this is the highest in the state.’

“In the past five years, EPA's Air Quality Index data indicates Houston has had 238 days when air pollution conditions were unhealthy.’

“EPA's data on the Air Quality Index indicates, Houston had approximately four times as many days with unhealthy conditions compared with San Antonio, the region allocated the most funds. The costs associated with adverse health effects in Houston are estimated to be four times higher than the region allocated the most funds.’

“There is a significant disproportion of allocation of dollars per bad air quality day. San Antonio is receiving 10.47 times more dollars per bad air quality day than Houston (e.g, \$1,205,815.64 per day in San Antonio compare with \$115, 125.54 per day in Houston).’

“According to EPA's Air Quality Index data for the regions allocated funds in the draft plan, the region with the best air quality will receive the most money and the region with the worst air quality will receive the least. Again, reducing NOx anywhere does not have the same result, benefits are not linear. Reducing where air quality is hardest hit and many people are at risk will provide significantly larger benefits to the public health of the state, making each mitigation dollar go farther.’

“The City of Houston requests that TCEQ re-allocate the funds to those areas most impacted so that the mitigation of NOx provides the greatest health benefit possible for Texas, in line with the sentiment of the trust.’