IN THE UNITED STATES COURT OF APPEALS FOR THE DISTRICT OF COLUMBIA CIRCUIT

Environmental Defense Fund, Center For Biological Diversity, and Sierra Club,

Petitioners,

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY,

Respondent.

APPENDIX TO EMERGENCY MOTION OF JULY 17, 2018 VOLUME III (pages 694–706)

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DECLARATION OF HAROLD J. FARBER, M.D.

I, Dr. Harold J. Farber, declare as follows:

1. I am a member of Environmental Defense Fund ("EDF").

2. I currently reside in Houston, TX and have resided in the Houston area for $10\frac{1}{2}$ years.

3. I am a pediatric pulmonologist at Texas Children's Hospital in Houston and hold an appointment as Associate Professor of Pediatrics at Baylor College of Medicine. Additionally, I currently serve as Associate Medical Director of the Texas Children's Health Plan and Chair of the American Thoracic Society's Tobacco Action Committee. I specialize in both asthma and pediatric pulmonary medicine. I am board certified by the American Board of Pediatrics in General Pediatrics and in the subspecialty of Pediatric Pulmonology.

4. I have published extensively on the subject of asthma in children in the scientific literature, with over 60 peer-reviewed scientific publications, as well as in the lay literature, including a book entitled *Control your Child's Asthma; A Breakthrough Program for the Treatment and Management of Childhood Asthma*. Selected titles from my peer-reviewed literature linking ozone exposure to decreased lung growth, increased risk of asthma, and respiratory disease include: "Early-life ozone exposure associated with asthma without sensitization in Latino

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children,"¹ "Socioeconomic status and asthma control in African American youth in SAGE II, "² and "Public policy, air quality, and protecting the most vulnerable."³ I also am the author or co-author of six chapters in professional textbooks, and I currently serve on the Editorial Board of CHEST Journal (the official publication of the American College of Chest Physicians).

5. I understand that EPA's recent non-enforcement decision states that it will not enforce the 300 glider per year production exemption limit under current regulations against any manufacturer or supplier. I further understand that this decision applies to all production of non-compliant glider vehicles through 2019, imminently harming human health and the environment.

6. EPA's decision not to enforce standards applicable to gliders will result in an increase in the number of high-polluting, pre-2002 heavy-duty diesel freight engines on the road. I understand that the vehicles that use these older engines emit significantly higher levels of pollutants compared to modern engines, including diesel particulate matter, which consists primarily of fine particulate matter (PM_{2.5}), as well as oxides of nitrogen (NO_X), a pollutant that is a precursor to the formation of ground-level ozone, also known as smog.

¹ Harold Farber et al., *Early-life Ozone Exposure Associated with Asthma without Sensitization in Latino Children*. 138 J. ALLERGY & CLINICAL IMMUNOLOGY 1703 (2016).

² Harold Farber et al., *Socioeconomic Status and Asthma Control in African American Youth in SAGE II*, 51(7) J. ASTHMA. 720 (2014).

³ Harold Farber, *Public Policy, Air Quality, and Protecting the Most Vulnerable,* 144 CHEST 1093 (2013).

7. According to the American Lung Association, Houston ranks among the worst cities in the United States for air quality, coming in the top twenty worst places for ground-level ozone and annual particle pollution nationwide.⁴ Within Houston's metropolitan population, the American Lung Association estimates that at least 500,000 people suffer from asthma.

8. My Pediatric Pulmonology practice includes a large number of patients with asthma, cough, and pneumonia as well as a large number of technology dependent patients with minimal to no pulmonary reserve. My patients come from diverse backgrounds, ethnicities, and socio-economic status. I see children with private insurance as well as low-income children with Medicaid insurance, in addition to a limited amount of charity care for those with low income and no health insurance. In my role as Associate Medical Director for Texas Children's Health Plan, I share responsibility for managing the health of over 400,000 Medicaid and CHIP insured children in the greater Houston area and in East Texas, of whom close to 20% have had an asthma diagnosis.⁵

9. I am aware that the Houston-Galveston-Brazoria area is currently classified as a Moderate ozone nonattainment area under the National Ambient Air

 ⁴ American Lung Association, *State of the Air 2017: Houston—The Woodlands, TX*, LUNG.ORG, *available at* http://www.lung.org/our-initiatives/healthy-air/sota/city-rankings/most-polluted-cities.html
 ⁵ Farber HJ, Silveira EA, Vicere D, Kothari VD, Giardino AP. Oral Corticosteroid Prescribing for Children with Asthma in a Medicaid Managed Care Program. Pediatrics. 2017 May;139(5). pii: e20164146.

Quality Standards (NAAQS).⁶ According to the EPA, Houston has failed to reach ozone attainment since 2012.⁷

10. I am also keenly aware that Houston's road network is heavily trafficked, resulting in high levels of vehicle emissions and consequent air pollution, especially from freight vehicles.

11. For these reasons, I am very concerned about the increased exposure to diesel exhaust, PM_{2.5}, and NOx pollution that my patients may experience as a result of EPA's decision not to enforce emission requirements for glider vehicles. I am likewise concerned about the contribution of these vehicles to the formation of ozone.

INCREASED NO_X Emissions Lead to the Formation of Ozone, Which Harms Human Health

12. I treat children in the greater Houston area for asthma and other chronic respiratory problems. Poor air quality, including short-term and long-term exposure to ozone, adversely impacts their health – as well as my own. EPA has confirmed that "in urban areas," NOx, volatile organic compounds (VOCs), and

⁶ Determination of Nonattainment and Reclassification of the Houston-Galveston-Brazoria 2008 8-hour Ozone Nonattainment Area; Texas, 81 Fed. Reg. at 90,210 (Dec. 14, 2016); See also EPA, Texas Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants, available at https://www3.epa.gov/airquality/greenbook/anayo_tx.html

⁷ EPA, Texas Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants, available at <u>https://www3.epa.gov/airquality/greenbook/anayo_tx.html</u>.

carbon monoxide (CO) "are all important precursors" to ozone formation.⁸ EPA has also confirmed that "a very large amount of evidence spanning several decades supports a relationship between exposure to [ozone] and a broad range of respiratory effects."⁹

13. As a pediatric pulmonologist, I am acutely aware of the negative health effects of ozone, especially on children, vulnerable populations, and people with asthma. I have contributed to the literature assessing these impacts and witnessed among my own patients the adverse health effects that occur after both short-term exposure (defined as an exposure of hours, days, or weeks) and longterm exposure (measured in months to years).¹⁰ Additionally, peak (1- to 3-hour) and sustained (6- to 8-hour) exposures to ozone can result in serious health consequences.

14. Short-term ozone exposure can irritate the respiratory system, making breathing more difficult and thereby limiting a person's normal activity.¹¹ Short-term ozone exposure has been clearly shown to decrease lung function, causing increased risk for asthma attacks, increased need for hospitalizations and emergency department visits for asthma, and even increased mortality resulting

⁸ ENVIRONMENTAL PROTECTION AGENCY, 2013 FINAL REPORT: INTEGRATED SCIENCE ASSESSMENT FOR OZONE AND RELATED PHOTOCHEMICAL OXIDANTS, 2-4 (2013), available at <u>https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=247492</u> [hereinafter "Ozone ISA"].

⁹ Ozone ISA, at 1-6.

¹⁰ Ozone ISA, 1-6.

¹¹ Ozone ISA, 1-6.

from respiratory complications.¹² In addition to causing significant harm to human health and public welfare, short-term exposure to ozone also substantially adds to costs of medical care and lost productivity.

15. Long-term ozone exposure is even more dangerous, with reductions in lung function and lung growth leading to increased incidences of "new-onset asthma . . . asthma hospital admissions, pulmonary structure and function, and respiratory mortality."¹³

DIESEL EXHAUST IS A KNOWN HUMAN CARCINOGEN AND CONTAINS THE DEADLY CRITERIA POLLUTANT PM2.5

16. Diesel exhaust is classified as a probable and known human carcinogen, like asbestos, benzene, and cigarette smoke.¹⁴ Diesel exhaust contains a wide array of substances known to have harmful effects on human health, including aldehydes, benzenes, arsenic, and nickel.¹⁵ California's Office of

¹⁴ U.S. Environmental Protection Agency. 2002. Health Assessment Document For Diesel Engine Exhaust. May 2002. National Center for Environmental Assessment - Office of Research and Development. Washington, DC. EPA/600/8-90/057F (citing sources); World Health Organization, Public health round-up, 90 Bulletin of the World Health Organization 477-556. (July 2012), *available at* <u>http://www.who.int/bulletin/volumes/90/7/12-010712/en/;</u> International Agency for Research on Cancer, IARC: Diesel Engine Exhaust Carcinogenic (Jun. 12, 2012), *available at* <u>https://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213_E.pdf;</u> California Air Resources Board, Overview: Diesel Exhaust and Health (last reviewed Apr. 12, 2016), *available at* <u>https://www.arb.ca.gov/research/diesel/diesel-health.htm</u>.

¹² *Id.;* Qian Di et al., *Association of Short-term Exposure to Air Pollution With Mortality in Older Adults*, 213 [J]AMA 2446 (2017) ("short-term exposures to PM_{2.5} and ozone, even at levels much lower than the current daily standards, are associated with increased mortality, particularly for susceptible populations.") ¹³ National Ambient Air Quality Standards for Ozone, 80 Fed. Reg. 65,292, 65,307 (Oct. 26, 2015)

⁽codified at 40 C.F.R. Parts 50, 51, 52 et al.) [hereinafter "2015 Ozone NAAQs"].

¹⁵ OEHHA, *Health Effects of Diesel Exhaust*, OEHHA.CA.GOV (May 21, 2001), <u>https://oehha.ca.gov/air/health-effects-diesel-exhaust</u>; U.S. Environmental Protection Agency, *Health Assessment Document for Diesel Engine Exhaust*, EPA/600/8-90/057F, 1-1 (May 2002).

Environmental Health Hazard Assessment (OEHHA) reports that diesel exhaust "contribute[s] to mutations in cells that can lead to cancer . . . long-term exposure to diesel exhaust particles poses the highest cancer risk of any toxic air contaminant evaluated by OEHHA."¹⁶

17. Diesel exhaust also includes the criteria pollutant fine particulate matter, (PM_{2.5}). As a pediatric pulmonologist, I am acutely aware of the negative health effects of PM_{2.5}. PM_{2.5} leads to a host of respiratory problems and thousands of premature deaths every year.¹⁷ PM_{2.5} inhalation is linked to premature mortality, aggravation of respiratory and cardiovascular disease, lung disease, decreased lung function, aggravated asthma and increased frequency and severity of asthma attacks, and certain cardiovascular problems.¹⁸

18. Even short-term exposure to diesel exhaust can have immediate impacts on health, causing irritation to the eyes, throat, and lungs, as well as coughing, headaches, lightheadedness, and even nausea.¹⁹ Because diesel exhaust causes inflammation in the lungs, short-term exposure "aggravate[s] chronic respiratory symptoms and increase[s] the frequency or intensity of asthma

¹⁶ OEHHA, *Health Effects of Diesel Exhaust*, OEHHA.CA.GOV (May 21, 2001), *available at* https://oehha.ca.gov/air/health-effects-diesel-exhaust.

¹⁷ National Ambient Air Quality Standards for Particulate Matter, 78 Fed. Reg. 3108 (Jan. 15, 2013) (codified at 40 C.F.R. Pts. 50, 51, 52, 53 and 58).

¹⁸ *Id*.at 3103.

¹⁹ Mount Sinai Selikoff Centers for Occupational Health, Diesel Exhaust Exposure, *available at* https://www.mountsinai.org/static_files/MSMC/Files/Patient%20Care/Occupational%20Health/DieselExhaustExpos ureFactSheet_07.pdf

attacks."²⁰ The U.S. Environmental Protection Agency has found "strong epidemiological evidence" linking both short- and long-term "PM_{2.5} exposures with cardiovascular-related and respiratory-related mortality and morbidity."²¹

MY PATIENTS SUFFER INCREASED ASTHMA COMPLICATIONS AND HIGHER HEALTH CARE COSTS DUE TO POOR AIR QUALITY

19. My patients experience a variety of asthma complications arising from poor air quality, especially from higher levels of ozone, including more severe asthma attacks, increased emergency room visits, and increased medication need.

20. Asthma attacks present a broad array of symptoms ranging from relatively mild to life-threateningly severe. Mild symptoms include a tickle in the throat, coughing, and a high-pitched whistle when exhaling. More serious symptoms include trouble sleeping, shortness of breath or tightness in the chest, fast breathing even when standing still, and difficulty talking. During severe attacks, the lips and fingertips of someone suffering an attack may turn blue as airflow is restricted. In the worst cases, airflow stops entirely; intubation and intensive medical care become necessary.

²⁰ OEHHA, Health Effects of Diesel Exhaust.

²¹ NAAQ Standards, 3103.

21. I am concerned that increased pollution from diesel engines will cause a corresponding increase in rates of asthma and an increase in the symptoms described above in Houston and nationwide.

22. In addition to the physical harm caused by respiratory disease and the side effects of the needed medications, its treatment, including the potentially preventable need for emergency department visits and hospitalizations, can be very expensive for patients and for their families. As the most common chronic illness of children, asthma is very expensive for health care payers and for society as a whole. For example, 40% of Texas children, or more than 2.4 million children, are enrolled in Medicaid; in 2004, the cost of asthma-related treatment for these children exceeded \$242 million.²² Nationwide, the CDC estimates that in 2007, the cost of asthma to society from loss of productivity, including missed school days and missed work days, was \$3.8 billion.²³ One study has estimated the incremental direct cost of asthma to society for the years 2002-2007 as \$3,259 (in 2009 dollars) per person per year.²⁴

²² Judy K. Wendt, Elaine Symanski, and Xianglin L. Du, *Estimation of Asthma Incidence Among Low-Income Children in Texas: A Novel Approach Using Medicaid Claims Data*, 176 Am. J. Epidemiology 8:744-750 (2012), *available at* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3571251/#KWS150C29.

²³ Centers for Disease Control and Prevention, *Asthma Facts—CDC's National Asthma Control Program Grantees*, Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (2013), *available at* <u>https://www.cdc.gov/asthma/pdfs/asthma_facts_program_grantees.pdf</u>.

²⁴ Sarah Beth L. Barnett and Tursynbek A. Nurmagambetov, *Costs of asthma in the United States: 2002-2007*, 127 J. ALLERGY & CLINICAL IMMUNOLOGY 1:145-152 (2013), *available at <u>http://www.jacionline.org/article/S0091-6749(10)01634-9/abstract</u>.*

POLLUTANTS IN DIESEL EMISSIONS HAVE DISPROPORTIONATE IMPACTS ON VULNERABLE POPULATIONS, INCLUDING CHILDREN AND PEOPLE WITH ASTHMA

23. As discussed above, pollutants emitted by older diesel engines, including $PM_{2.5}$ and NOx, have significant negative impacts on health and cause increased ozone formation, which likewise has negative health impacts.

24. Children are particularly vulnerable to the harmful effects of pollutants and ozone formation due to the ongoing development of their lungs and the amount of time they typically spend outdoors.²⁵

25. I have seen in my practice that the typically low-income communities near highways, freight transportation corridors, and transit hubs experience the negative health effects of these pollutants at higher levels than more affluent communities, however the affluent communities are not immune from these problems.

26. Vulnerable populations, including minorities and low-income communities, suffer disproportionately from poor air quality because these communities "often live in or near urban areas where pollution exposures are higher."²⁶ The CDC confirms that "economically disadvantaged and minority

 $^{^{25}}$ 2015 Ozone NAAQs, at 65,310 ("children tend to spend more time outdoors when O₃ levels are high, [leading] to increased exposure and dose, and they also have biological, or intrinsic, risk factors (*e.g.*, their lungs are still developing)").

²⁶ Farber, *Early-life Ozone Exposure*, 1703; *see also* Marie Lynn Miranda et al., *Making the Environmental Justice Grade: The Relative Burden of Air Pollution Exposure in the United States*, 8 INT'L J. ENVTL RES. & PUB. HEALTH 1755 (2011).

populations share a disproportionate burden of air pollution exposure and risk."²⁷ For instance, one 2011 study ranked counties nationwide according to ozone pollution and found that the counties in the bottom 20% —i.e., counties with the worst air quality—had higher percentages of both Hispanic populations and children under 5 years of age than the counties in the top 20%.²⁸

27. Additionally, many minority communities suffer higher rates of asthma compared to white populations. For example, African Americans are almost three times more likely to die from asthma-related complications; black women are 20% more likely to have asthma and children are four times more likely to be admitted to the hospital for asthma than non-Hispanic white children.²⁹

28. Several studies have linked this prevalence of asthma to poor urban air quality, among other risk factors.³⁰ Low socioeconomic status "is associated with . . . increase[d] exposure to traffic-related air pollution."³¹ A large body of research confirms that pollution from motor vehicles "tend to be higher closer to the road, with the highest levels generally within the first 500 feet...of a roadway

²⁷ Tegan Boehmer, *Residential Proximity to Major Highways* — United States, 2010, 62 MORTALITY & MORBIDITY WEEKLY REP. 46-50, CDC.GOV (2013), available at https://www.cdc.gov/mmwr/preview/mmwrhtml/su6203a8.htm.

²⁸ Marie Lynn Miranda, *Making the Environmental Justice Grade*, 1764.

 ²⁹ U.S. Department of Health and Human Services, Office of Minority Health, *Asthma and African Americans* (Jan. 9, 2018), *available at* https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=15.
 ³⁰ Farber, *Socioeconomic Status*, 1203.

³¹ Farber, *Socioeconomic Status*, 1203.

and reaching background levels within approximately 2,000 feet...of a roadway."³² Roadway pollution spreads especially far in the early morning hours when freight traffic significantly increases, with studies showing that pollution clouds can extend as much as 2 kilometers – over 6,400 feet – away from highways.³³

29. I am concerned that increased emissions of PM_{2.5} and NOx from glider vehicles and engines as a result of EPA's decision not to enforce emission requirements for these vehicles will particularly impact communities living near highways, freight transportation corridors, and transit hubs nationwide, resulting in negative health impacts to these populations.

CONCLUSION

I am concerned that EPA's decision to not enforce emissions requirements for glider vehicles and engines will cause increased emissions of PM_{2.5} and NOx from these vehicles and will result in an increase in the negative health impacts described above for my patients and across the nation.

³² ENVIRONMENTAL PROTECTION AGENCY, BEST PRACTICES FOR REDUCING NEAR-ROAD AIR POLLUTION EXPOSURE AT SCHOOLS, 2 (2015), *available at* https://www.epa.gov/sites/production/files/2015-

^{10/}documents/ochp_2015_near_road_pollution_booklet_v16_508.pdf; see also Alex Karner, Near-Roadway Air Quality: Synthesizing the Findings from Real-World Data, 44 J. EVNTL SCI. & TECH. 5334– 5344 (2010).

³³ Wonsik Choi et al., Prevalence of Wide Area Impacts Downwind of Freeways Under Pre-sunrise Stable Atmospheric Conditions, 62 ATMOSPHERIC ENV'T 318-27 (2012).

I declare the foregoing is true and correct.

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Harold J. Farber, MD, MSPH

Dated July 12, 2018