Sent via Email March 21, 2022

Administrator Michael Regan
Environmental Protection Agency
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Washington, D.C. 20460
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Dear Administrator Regan:

On behalf of the undersigned local and regional governmental organizations, we write in support of the August 24, 2021 Petition for Rulemaking ("Petition"), as updated October 12, 2021, by Alaska Community Action on Toxics, Center for Environmental Health, Friends of the Earth, Montgomery-Gibbs Environmental Coalition, Oregon Aviation Watch, County of Santa Clara, California, and Town of Middleton, Wisconsin (collectively "Petitioners"), urging the U.S. Environmental Protection Agency ("EPA") to make a long-overdue endangerment finding for leaded aviation gasoline ("avgas"). We applaud the commitment by the EPA, announced on January 12, 2022, to propose an endangerment finding under Section 231 of the Clean Air Act for leaded avgas by the end of 2022 and to finalize that finding in 2023. We write to urge the EPA to make an affirmative finding on the announced timelines that leaded avgas contributes to air pollution that endangers public health and welfare, and to swiftly issue emissions standards that will eliminate this last remaining leaded transportation fuel. Daily exposure to lead from avgas causes severe and avoidable harm to vulnerable communities across this nation, and eliminating it should be treated as an environmental justice priority of this federal Administration.

As discussed below and further detailed in the Petition, overwhelming evidence demonstrates that leaded avgas meets the legal requirements for an endangerment finding: that lead air pollution can reasonably be anticipated to endanger public health or welfare, and that emissions from the use of leaded avgas by piston-engine aircraft contribute to this harmful pollution. For these reasons, the EPA has been promising to open an endangerment finding proceeding for over a decade.[1] Its delay in doing so has posed unacceptable and continuing costs to the health and development of exposed children, to the safety of airport workers, and to the welfare of already overburdened communities. The harms of leaded avgas exposure also impose costs on public agencies responsible for administering the public health, public safety, and social

[1] *See* EPA, Advance Notice of Proposed Rulemaking on Lead Emissions from Piston-Engine Aircraft Using Leaded Aviation Gasoline, 75 Fed. Reg. 22,440 (Apr. 28, 2010) (describing information to be used by the EPA in reaching an endangerment finding for leaded avgas) [hereinafter "2010 ANPR"]; Letter and Memorandum from Gina McCarthy, Assistant Administrator, EPA, to Deborah Behles & Helen Kang, Env't L. & Just. Clinic, & Marianne Engelman Lado et al., Earthjustice (July 18, 2012), available at https://www.epa.gov/sites/default/files/2016-09/documents/ltr-response-av-ld-petition.pdf (projecting that EPA would issue a final endangerment determination for leaded avgas by 2015); Letter from Gina McCarthy, Administrator, EPA, to Deborah Behles, Clinical Staff Attorney, Env't L. & Just. Clinic, & Marianne Engelman Lado, Managing Attorney, Earthjustice (Jan. 23, 2015) (on file with EPA), available at https://www.epa.gov/sites/default/files/2016-09/documents/ltr-response-av-ld-foe-psr-oaw-2015-1-23.pdf (reaffirming commitment and extending the projected timeline for an endangerment finding to 2017).

welfare systems that serve exposed populations, as well as costs on agencies charged with maintaining the safe operation of the many publicly-owned airports.

Preventing exposure to lead from avgas requires coordinated federal action. Federal law limits the authority of state and local governments to directly regulate aviation fuel additives on their own. And difficulties in sourcing unleaded fuels, capital costs for providing additional fueling infrastructure, and barriers to obtaining type certifications for fuel switching, among other things, limit the ability of agencies with proprietary control of local airports to eliminate exposures impacting the communities they serve. Further, public airport proprietors that have taken or proposed aggressive action to prevent exposures – such as the County of Santa Clara in banning sales of leaded avgas at its airports, or the City of Santa Monica in preparing to remove fixed base operators from its airports and take over fueling operations – have been subject to investigation or other obstacles imposed by the Federal Aviation Administration ("FAA").[2] Agencies without proprietary control over general aviation airports have even fewer options, regardless of whether the impacts of lead emissions occur primarily within their jurisdictions. Nor, as experience has proven, will investments in research and development of unleaded fuels bring about the shift automatically. Federal regulation is urgently needed to boost supply, correct misaligned incentives for fuel transitioning, and expedite timelines.

Congress has vested both the authority and the responsibility to regulate this damaging pollutant in the EPA. The EPA has taken the important first step by announcing that it will propose an endangerment finding. But the harms caused by leaded avgas exposure will not take hiatus. The time for the EPA to follow through on its obligations by issuing an endangerment finding for leaded avgas and setting emission standards to control the pollutant is long past due.

I. Leaded Avgas Meets the Legal Requirements for an Endangerment Finding

Section 231 of the Clean Air Act requires the EPA to issue emission standards to control the emission of "any air pollutant from any class or classes of aircraft engines" if the EPA determines that the pollutant "causes, or contributes to, air pollution which may reasonably be anticipated to endanger public health or welfare."[3] This threshold determination – commonly referred to as an "endangerment finding" – requires two showings: (1) that lead air pollution as a whole may reasonably be anticipated to endanger public health or welfare, and (2) that emissions from use of leaded avgas in piston-engine aircraft cause or contribute to this pollution. The evidence that leaded avgas meets both legal requirements for an endangerment finding is overwhelming. Airborne lead in general, and from leaded avgas specifically, leads to elevated blood lead levels in exposed children. In turn, elevated blood lead levels increase those children's risk for a host of short and long-term health problems, including irreversible cognitive

[2] *See* Mark A. McClardy, FAA Airports Division Director, Notice of Informal Investigation Under 14 C.F.R. § 13.1, to Eric Peterson, Director of County Airports for County of Santa Clara (Dec. 22, 2021), available at https://countyairports.sccgov.org/faa-complaint; *see also* Settlement Agreement/Consent Decree between the FAA and City of Santa Monica, *City of Santa Monica v. United States*, Case No. 2:13-cv-08046-JFW-VBK, Dkt. No. 52 at 7 (C.D. Cal. Jan. 30, 2017), available at https://www.faa.gov/airports/airport_compliance/santa_monica_settlement/media/Santa-Monica-settlement-stipulation-and-order-consent-decree-2017.pdf ("Nothing in this Agreement shall allow the City to restrict the sale of leaded aviation fuels for so long as the FAA authorizes the use of such fuels within the United States.")
[3] 42 U.S.C. § 7571(a)(2).

impairment. These harms have ripple effects through communities and the public agencies that serve them. And, with leaded avgas producing 70% of airborne lead in this country, its contribution to lead air pollution is beyond dispute.

A. Lead air pollution endangers public health and welfare.

1. Lack of regulation for leaded avgas harms vulnerable and already overburdened communities.

Since its inception, the EPA has acknowledged the damaging health effects of airborne lead. Nearly fifty years ago, the EPA recognized lead as a "known toxic substance for which no beneficial biological role" exists and found that airborne lead was contributing to an "epidemic" of "[e]xcessive lead exposures among children."[4] According to the U.S. Centers for Disease Control and Prevention, lead exposure can harm the nervous, cardiovascular, immune, and reproductive systems, damage the kidneys, and cause anemia and increased blood pressure.[5] Moreover, because the lead particles released in aircraft exhaust tend to be relatively small in size, they have the "potential of rapidly penetrating the lung defenses" and "gain[ing] direct access to the brain," potentially increasing toxicity.[6]

Children are particularly vulnerable to lead, both as a result of behaviors that make them more susceptible to exposure and their greater sensitivity to lead toxicity.[7] Even at the lowest detectable levels, exposure to lead may cause cognitive and intellectual impairment, harm academic performance, and increase risk for behavioral disorders.[8] Indeed, decline in cognitive ability is steepest at lower blood lead levels.[9] Many of the harms caused by childhood lead exposure are irreversible. Childhood lead exposure, for instance, has been linked to measurable reductions in IQ and cognitive and behavioral impairments persisting into adulthood, as well as adult-onset physical health problems.[10]

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[4] EPA, *EPA's Position on the Health Effects of Airborne Lead* at VII-4 (Nov. 29, 1972), available at https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=9100EYMW.TXT; *see also, e.g.,* Prohibition on Gasoline Containing Lead or Lead Additives for Highway Use, 61 Fed. Reg. 3832, 3833 (Feb. 2, 1996) (recognizing that leaded fuel poses "a significant risk of harm to the health of urban populations, especially children").

[5] Agency for Toxic Substances and Disease Registry, Lead – ToxFAQs (2020), available at https://www.atsdr.cdc.gov/toxfaqs/tfacts13.pdf [hereinafter "ToxFAQs"].

[6] Transp. Rsch. Bd. et al., *Options for Reducing Lead Emissions from Piston-Engine Aircraft* at 43-44 (National Academies of Sciences, 2021) [hereinafter "NAS Report"].

[7] *Id*.

[8] Mountain Data Group, *Leaded Aviation Gasoline Exposure Risk at Reid-Hillview Airport in Santa Clara County, California* 1 (2021), available at https://news.sccgov.org/sites/g/files/exjcpb956/files/documents/RHV-Airborne-Lead-Study-Report.pdf [hereinafter "RHV Lead Study"].

[9] *Id*. at 2-3; *see id.* at 1 (explaining that "estimated marginal effects with respect to negative cognitive and behavioral outcomes in lead-exposed children are higher at lower [blood lead levels]"); Bruce P. Lanphear, *Childhood Lead Poisoning Preventing: Too Little, Too Late*, 293 J. Am. Med. Assn. 2274 (2005).

[10] *See, e.g.*, RHV Lead Study at 2; ToxFAQs; Aaron Rueben et. al., *Association of Childhood Blood Lead Levels with Cognitive Function and Socioeconomic Status at Age 38 Years and With IQ Change and Socioeconomic Mobility Between Childhood and Adulthood*, 317(12) J. Am. Med. Ass'n. 1244 (2017); Michael J. McFarland et al., *Half of US Population Exposed to Adverse Lead levels in earth Childhood*, 119(11) Proc. Nat'l Acad. of Sci. (Mar. 7, 2022), available at https://www.pnas.org/doi/full/10.1073/pnas.2118631119 (concluding that average lead-linked loss in cognitive ability was 2.6 IQ points per person as of 2015 as a result of early childhood lead exposure).

Impacts of leaded avgas use fall hardest on children, workers, and communities that spend significant time in close proximity to heavy piston-engine aircraft traffic. The EPA's own analysis suggests that over five million people, including more than 360,000 children aged five or younger, live within 500 meters of a general aviation airport.[11] Moreover, some 16 million people live within a kilometer of a general aviation airport – a distance that, according to the National Academies of Sciences, has been shown to correlate with increased blood lead levels.[12] In addition, over 160,000 children attend school near airports where piston-engine aircraft operate.[13]

Harms caused by leaded avgas are not evenly distributed. One percent of general aviation airports contribute 25 percent of total airport lead emissions.[14] Additionally, at least 60 percent of the fifty highest-emitting airports are located in communities with larger racial minority populations than the national average.[15] For many of these communities, the harms from leaded avgas exposure layer on top of an outsized share of exposures to other sources of toxins. For instance, one study of 448 airports in Michigan reported that the percentage of homes presumed by their age to contain lead-based paint was almost twice as high in neighborhoods proximate to airports compared to neighborhoods more distant from airports.[16] In other words, those children most at risk of leaded avgas exposure are also among those at highest risk of lead-based paint exposure. In this way, the health impacts from multiple sources of lead exposure compound.

Likewise, lead emissions from avgas contribute to the cumulative burden of air pollution and other environmental stressors borne by airport workers and airport-adjacent communities, including pollutants from industrial and transportation-related sources as well as from aircraft exhaust, airport ground-service equipment, and other operations related to the airports themselves.[17] Many of these communities are also particularly vulnerable to impacts from these cumulative exposures due to poverty, health characteristics, housing burden, linguistic isolation, age, and other factors. For instance, in Alameda County, California, the 15 census tracts where the most lead-poisoned children have been identified are predominantly Latinx, Black, and Asian communities which have a confluence of low household incomes, older rental properties, substandard housing conditions, concentrations of older housing, and a high percentage of

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[11] EPA, *National Analysis of the Populations Residing Near or Attending School Near U.S. Airports* at 13 (2020), available at https://nepis.epa.gov/Exe/ZyPDF.cgi/P100YG4A.PDF?Dockey=P100YG4A.PDF.
[12] NAS Report at 47-48.
[13] EPA, *National Analysis of the Populations Residing Near or Attending School Near U.S. Airports* at 13.
[14] NAS Report at 41 (reporting also that three percent of airports with the highest fleet activity emit 50 percent of emissions).
[15] Petition at 5.
[16] Sammy Zahran et. al., *The Effect of Leaded Aviation Gasoline on Blood Lead in Children,* 2(4) J. Assn. of Env't & Res. Economists 575, 576 (July 2017).
[17] *See* Mauro Masiol and Roy M. Harrison, *Aircraft Engine Exhaust Emissions and Other Airport-Related Contribution to Ambient Air Pollution: A Review*, 95 Atmos. Environ. 409 (2014); *cf.* Katja M. Bendtsen, *A Review of Health Effects Associated with Exposure to Jet Engine Emissions in and Around Airports*, 20 Environ. Health 10 (2021) (concluding proximity of residential areas to airports with jet engine traffic was associated with increased risk of disease, increased hospital admission, and self-reported lung symptoms).

families with young children.[18] In the City of Oakland, the neighborhood surrounding the Oakland International Airport suffers from a variety of environmental hazards, such as poor air or water quality, as well as socioeconomic limitations, such as lack of access to healthcare or linguistic isolation.[19] Over 80% of the residents of this neighborhood are Black or Latinx.[20]

With much piston-engine aircraft activity concentrated in already overburdened communities, continued use of leaded avgas presents one of the most pressing environmental justice problems of this era. Reid Hillview Airport is an illustrative example.[21] Among the 150 highest lead-emitting airports in the nation, Reid Hillview's ratio of lead emissions per person living within a one-mile radius is the third-highest ratio in the nation, and is over ten times the median.[22] Located in East San José, in the heart of Silicon Valley, the airport is situated in one of the most nonwhite and lowest-income locations in the region. In an American Community Survey, 93% of respondents living within 1.5 miles of the airport identified as Latino/Hispanic or Asian; in the neighborhoods immediately abutting the airport, 99.3% of residents identified as a race other than white.[23] In the four zip codes closest to the airport, 27% of residents live below 200% of the Federal Poverty Line compared to 16% for the remainder of the county.[24] Residents in these zip codes experience higher rates of diseases like cancer, Alzheimer's, stroke, and diabetes than elsewhere in the county.[25] They also face a disproportionate burden of other sources of lead hazards, such as lead risk from housing.[26]

Exposures to lead particles from piston-engine aircraft further these disparities. A recent peer-reviewed study[27] of Reid Hillview Airport found that children residing within a half-mile of the airport have higher blood lead levels compared to statistically similar children more distant from the airport.[28] The effects compound when accounting for intensity of aircraft traffic and

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[18] Marybell N. Tobias, *Racial Equity Impact Analysis: Eliminating Lead Paint Hazards in Oakland & Alameda County* at 44 (2021), available at https://cao-94612.s3.amazonaws.com/documents/Lead-Paint-REIA_9-23-21_FINAL.pdf.
[19] *Id.* at 52-54
[20] *Id.* at 57
[21] *See* R. Dillon, *A Crisis on Our Hands*, KQED (Aug. 5, 2021), available at https://www.kqed.org/news/11883910/a-crisis-on-our-hands-children-near-san-joses-reid-hillview-airport-exposed-to-dangerously-high-lead-levels-new-study-shows.
[22] Analysis based on data from EPA's National Emissions Inventory and EJScreen.
[23] County of Santa Clara, Report of the County Executive to Board of Supervisors, Report No. 107018 (approved as amended Aug. 17, 2021), available at http://sccgov.iqm2.com/Citizens/Detail_LegiFile.aspx?Frame=SplitView&MeetingID=13226&MediaPosition=&ID=107018&CssClass=.
[24] *Id*.
[25] *Id*.
[26] CalEnviroScreen 4.0: Children's Lead Risk from Housing, available at https://oehha.maps.arcgis.com/apps/instant/sidebar/index.html?appid=6c2ec624cea84b66a95412117da4977a.
[27] The RHV lead study was peer-reviewed by two external experts: Dr. Rebecca Anthopolos, an Assistant Professor in the Division of Biostatistics within the Department of Population Health at New York University Grossman School of Medicine, who has published on the risk of early childhood lead exposure in relation to aviation gasoline, and Dr. Mark Cullen, a retired professor of Medicine, Epidemiology, and Biomedical Data Sciences at Stanford University, where he served as the Founding Director of the Center for Population Health Sciences and as Senior Associate Dean for Research for the School of Medicine. The RHV Lead Study has also been submitted for formal journal publication.
[28] RHV Lead Study at 37 (finding that children within 0.5 miles of the airport have blood lead levels that are about 0.2 µg/dL higher than statistically similar children more distant from the airport).

wind patterns. **For instance, an increase in piston-engine aircraft traffic from minimum levels to maximum levels caused blood lead levels to increase by 0.83 µg/dL in children living within a half-mile of the airport – double the increase in blood lead levels at the peak of the Flint Water Crisis.**[29] On the whole, children living downwind of the airport were at the greatest risk, with blood lead levels that were, on average, 0.4 µg/dL higher than statistically similar comparators – roughly equal to the increase in childhood blood lead levels at the peak of the Flint Water Crisis.[30] Indeed, children living downwind of the airport were 200% more likely than children residing upwind of the airport to have a blood lead level equal to or greater than 4.5 µg/dL – the threshold for action used by the California Department of Public Health in assessing elevated blood lead.[31] Even commuting toward Reid Hillview Airport for school was found to put children at significant risk.[32] Accounting only for impacts of elevated blood lead levels on IQ, these exposures translate to a net lifetime earnings loss of $11-24.9 million for the cohort of children residing within 1.5 miles of the airport.[33]

2. Lead pollution imposes significant societal costs, which are often borne by state and local agencies.

While the harms of leaded avgas exposure are primarily borne by the people and communities directly exposed, the costs of lead exposure also ripple through social safety net systems, many of which are administered by state and local agencies. For illustration, researchers have conservatively estimated that exposure to lead from all sources among children aged six and younger results in total nationwide costs of $192-270 billion for each cohort of lead poisoned children, divided between lost lifetime earnings ($165-233 billion) and related lost tax revenue ($25-35 billion), direct medical treatment costs for lead poisoning ($11-53 billion), special education costs ($30-146 million), costs of lead-linked ADHD cases ($267 million annually), and direct costs of lead-linked criminal activity ($1.7 billion).[34] In 2012, Oakland's Office of Planning, Building & Neighborhood Preservation estimated that medical services, special education, disabilities, and lost wages due to lead poisoning cost city residents upwards of $150 million each year.[35] These cost estimates are *conservative*: they exclude the costs of treatment of secondary health harms caused by lead, neonatal mortality, benefits of lead hazard control on property values, and other indirect costs.[36] They also underestimate total societal costs by excluding impacts of lead exposure on older children and adults and by omitting consideration of indirect impacts of exposure on those who care for, are cared by, or live or work alongside lead-exposed individuals or are otherwise indirectly affected through the diversion of

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[29] *Id.* at xviii, 57.
[30] *Id*. at xv, 38-41.
[31] *Id.* at 54.
[32] *Id*. at xvii, 65-72 (finding that children who commute to school by traveling one mile towards Reid-Hillview Airport from their place of residence have predicted blood lead levels 0.65 µg/dL higher than children who commute one mile away from the airport).
[33] *Id*. at xviii, 79.
[34] *See, e.g.*, Elise Gould, *Childhood Lead Poisoning: Conservative Estimates of the Social and Economic Benefits of Lead Hazard Control*, 117 Env't Health Perspectives 1162, 1162 (July 2009).
[35] Marybell N. Tobias, *Racial Equity Impact Analysis: Eliminating Lead Paint Hazards in Oakland & Alameda County* at 11 (2021), available at https://cao-94612.s3.amazonaws.com/documents/Lead-Paint-REIA_9-23-21_FINAL.pdf.
[36] Gould, *Childhood Lead Poisoning* at 1166.

resources.[37] Many other harms – including the emotional and psychological harms of lead exposure – evade quantification.

Although the societal costs of exposure to lead specifically from avgas are less studied, the magnitude of the problem is undeniably severe. Studies have conservatively estimated costs of $1 billion nationwide each year, accounting only for lost lifetime earnings due to IQ decreases resulting from leaded avgas exposures to young children.[38] Adding in healthcare costs, special education costs, behavior and crime control costs, costs associated with adult and worker exposures, and other direct and indirect costs would significantly increase this estimate.[39]

The most directly impacted public systems are public health systems, government-run hospitals, and other safety net services. State and local governments are at the frontline of public health protection, operating 19% of the nation's community hospitals[40] and performing the bulk of public health activities nationwide. These public health and hospital systems expend resources to screen children for elevated blood lead levels, identify and prevent sources of exposure, and manage cases. In addition to direct treatment of lead-poisoned individuals, screening and treatment for the many secondary harms that lead poses – including harms to cardiovascular health, immune system and kidney function, reproductive system function, and cognition – consume staffing attention and resources.

Lead exposure also imposes costs on school systems, special education services, policing, and crime control infrastructure while reducing the tax revenue available to support these systems. In particular, public agencies operate childcare and public school systems, where behavioral and learning challenges resulting from lead exposures necessitate increased investment in special education services and divert resources from other needs.[41] Behavioral effects of lead exposure also have consequences for crime levels, which in turn tax public safety systems.[42] For instance, empirical analysis suggests that the reduction in childhood lead exposure caused by the removal of lead from gasoline in the 1970s was the most significant driver of the drop in violent crime during the 1990s.[43] Meanwhile, reduction in lifetime earnings attributable to lead exposures results in lost tax revenues for state and local governments.[44] While the specific contribution of avgas to these socialized costs may be incremental, it stands out as particularly egregious given the complete absence of federal regulation of this major ongoing source of lead pollution.

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[37] *See, e.g.*, Ludovica Gazze et. al., *The Long-Run Spillover Effects of Pollution: How Exposure to Lead Affects Everyone in the Classroom*, Nat'l. Bureau of Econ. Rsch. Working Paper No. 28782 (May 2021) (finding that having more lead-exposed peers is associated with reduced academic outcomes).

[38] Zahran et. al., *The Effect of Leaded Aviation Gasoline on Blood Lead in Children* at 604; Wolfe et. al., *Costs of IQ Loss from Leaded Aviation Gasoline Emissions*, 50(17) Env't. Sci. Tech. 9026 (2016); RHV Lead Study at 7.

[39] Zahran et. al., *The effect of Leaded Aviation Gasoline on Blood Lead in Children* at 606; *Wolfe, Costs of IQ Loss from Leaded Aviation Gasoline Emission*s at 9031; RHV Study at 7.

[40] Am. Hosp. Ass'n., *Fast Facts on U.S. Hospitals* (2021), available at https://www.aha.org/statistics/fast-facts-us-hospitals.

[41] Gould, *Childhood Lead Poisoning* at 1164-65.

[42] *Id*. at 1165.

[43] J. Wolpaw Reyes, *Environmental Policy as Social Policy? The Impact of Childhood Lead Exposure on Crime,* Nat'l. Bureau of Econ. Rsch. Working Paper No. 13097 (May 2007).

[44] Gould, *Childhood Lead Poisoning* at 1164.

Lead exposure even compromises the ability of public agencies to operate their general aviation airports and the services those airports provide. In addition to hosting commercial and recreational flights and pilot trainings, many general aviation airports provide critical functions such as emergency medical transport and wildfire response. These services cannot be provided without putting workers and communities at undue risk while leaded fuel continues to be used. The use of leaded avgas jeopardizes the health and safety of airport workers and their families, as workers may be directly exposed to dispensed or spilled fuels and may take it home to their households on their clothes.[45] In addition to compromising the ability of airports to safely provide these services, these exposures result in healthcare costs, workers' compensation costs, and other benefits payouts.[46]

In the absence of federal regulation, local governments that own and operate airports – and even those that do not – may incur further costs in efforts to prevent and mitigate lead exposures. This includes investment in unleaded fuel procurement and storage and dispensation infrastructure, changes to airport layouts, measures to promote fuel switching, education and training to prevent fuel spills and worker exposures, investments in assisting aircraft operators with obtaining supplemental type certificates to authorize their use of existed unleaded fuels, public health studies and guidance, and other costs incurred to protect the community from the harms of lead pollution and exposures from avgas.[47]

B. The significant contribution of leaded avgas to lead air pollution is beyond dispute.

For an emissions source to cause or contribute to an air pollution problem within the meaning of section 231 of the Clean Air Act, the source need not be the "sole or even a major part of [the] air pollution problem," nor even make a "'significant' contribution" toward it.[48] Only if a source contribution is "truly trivial or de minimis" might it fall below the threshold required to satisfy the second prong of the endangerment determination.[49] There can be no question that leaded avgas far exceeds this threshold.

Far from being a de minimis contributor to lead air pollution, leaded avgas is the most significant source of this harmful pollution nationwide. Leaded avgas is used by around 170,000 piston-engine aircraft operating out of 20,000 airports spread across the country.[50] Consumption of leaded avgas accounts for **70 percent** of all lead air emissions in the nation[51] and releases about a million pounds of lead into the environment each year.[52] The EPA itself has repeatedly

[45] NAS Report at 60, 63, 65-66.
[46] *See* Ronnie Levin, *The Attributable Annual Health Costs of U.S. Occupational Lead Poisoning*, 22 Int. J. Occupational Env't Health 107 (Apr. 2016).
[47] NAS Report at 76.
[48] Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66496, 66506 (Dec. 15, 2009).
[49] *Id.*
[50] NAS Report at 23, 27; EPA, *National Analysis of the Populations Residing Near or Attending School Near U.S. Airports* at 2.
[51] NAS Report at 35.
[52] Zahran et. al., *The Effect of Leaded Aviation Gasoline on Blood Lead in Children* at 579.

recognized the significant contribution of avgas to lead air pollution.[53] In a 2020 study of airborne lead concentrations at U.S. airports, the EPA concluded that general aviation airport operations increase lead air concentrations, particularly in downwind areas.[54] The EPA's study also identified a subset of airports where the lead emissions might potentially be violating national ambient air quality standards.[55]

Moreover, multiple studies have specifically linked the lead emissions from piston-engine aircraft to elevated blood lead levels in children residing or attending school in close proximity to general aviation airports.[56] Indeed, in the study of Reid Hillview Airport in East San José, researchers found that blood lead levels in children residing near the airport tracked the contraction in piston-engine aircraft activity during the period of heightened COVID-19 restrictions. During the period from February to July 2020 when piston-engine aircraft traffic declined by 35-45%, children residing nearby the airport presented with blood lead levels that were about 0.25 µg/dL lower than among children sampled outside this contraction window.[57] Eliminating lead from aviation gasoline would immediately remove a significant and ongoing source of lead exposures for this uniquely vulnerable subpopulation.[58]

II. Elimination of Lead Air Pollution from Avgas Will Not Occur Without EPA Regulation

Notwithstanding the commitment of many state and local governments to eliminating use of this toxic fuel additive, state and local governments have limited tools available to prevent lead emissions and exposures from avgas. Congress vested the authority and responsibility to set emission standards for air pollution from aircraft and engines in the EPA and the authority to prescribe fuel composition standards to control these emissions in the FAA.[59] These laws limit the authority of state and local governments to directly regulate lead emissions from avgas on their own.[60]

The mitigation options left to state and local governments are both costly to conduct and incapable of eliminating the problem, even assuming optimal coordination between local airport operators. The majority of the country's 4,815 public-use general aviation airports are owned by

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[53] *See, e.g.*, 2010 ANPR, 75 Fed. Reg. at 22442 ("On a national basis, emissions of lead from aircraft engines using leaded avgas are the largest single source category for emissions of lead to air…."); Petition at 9, n. 46.
[54] EPA, *Model-extrapolated Estimates of Airborne Lead Concentrations at U.S. Airports* at 3 (Feb. 2020), available at https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100YG52.pdf. The EPA also acknowledged that, by considering only airborne lead, its model was scoped conservatively. To reflect the full range of exposures to leaded avgas among populations near airports, the analysis would need to account for potential exposures to emitted lead particles that settle in nearby water and soil. *Id.* at 5.
[55] *Id*. at 60.
[56] *See* Petition at 9, n.47 (citing studies).
[57] RHV Lead Study at xvii, 62.
[58] *See* 74 Fed. Reg. at 66506 ("If vulnerable subpopulations are especially at risk, the [EPA] Administrator is entitled to take that point into account in deciding the question of endangerment.").
[59] *See* 42 U.S.C. § 7571; 49 U.S.C. § 44714.
[60] *See* 42 U.S.C. § 7573 (barring states and their political subdivisions from adopting or enforcing emission standards for air pollutants from aircraft or engines unless identical to those standards promulgated under the Clean Air Act).

cities, counties, and states.[61] Even when acting in their proprietary capacity, state and local governments are constrained in their ability to eliminate leaded avgas use at their own airports by, among other things: the terms of existing contracts with fixed-base operators, difficulties in procuring unleaded fuel, the costs of capitalizing infrastructure for new fuel sources, and barriers to obtaining FAA certifications to authorize unleaded fuel use for existing fleets.[62] Even when airport operators are able to source and provide infrastructure to dispense unleaded fuels, they may not be able to effectively prevent aircraft from fueling up with leaded fuel elsewhere. Agencies may thus find themselves in the untenable position of being required to operate general aviation airports to maintain aeronautical services notwithstanding the potential for ongoing toxic exposures to nearby communities and airport workers. Governments without a proprietary relationship to airports have even fewer options to protect local communities from exposures, even where the impacts from leaded avgas exposure are felt primarily within their jurisdictions. This problem is a national one, and it cannot be solved through a partial patchwork of localized efforts.

Nor, as experience has proven, will market forces or investments in research and development transition the piston-engine fleet to unleaded fuel use without federal regulatory action. While a currently available unleaded fuel, a proprietary UL94, could be used by about two-thirds of the existing piston-engine aircraft fleet, these lower-performance aircraft account for proportionally less fuel burn and flight hours.[63] Switching the lower-performance fleet to UL94 would thus only reduce the amount of lead consumed by about 30%.[64] Further, the many logistical and regulatory barriers to adoption of UL94 mean that the fuel is only available for sale at a select number of airports.[65] For aircraft owners, use of UL94 currently requires going through the often-lengthy process of securing a type certification from the FAA.[66] For airport operators, providing multiple fuel types on site to serve all aircraft requires additional infrastructure and capital investment.[67] With demand limited by these costs, securing adequate unleaded fuel supplies is a challenge. Further, while recent developments in the production of unleaded 100-octane drop-in replacement fuels usable by all aircraft have been promising,[68] commercialization and FAA certification are slow and incentives to accelerate the transition are

[61] NAS Report at 27.
[62] *See, e.g.*, *id*. at 2 (explaining that so long as they must also provide a higher-octane leaded fuel, "thousands of small airports would need to invest more than $100,000 in a second avgas storage and dispensing system" to dispense UL94), *id.* at 16 ("[A]ircraft owners interested in switching to unleaded fuels may find this recertification option prohibitively expensive, except in cases where a supplemental [type certificate] is already available at moderate cost."); *id*. at 82 (explaining that "the costs for airports to add storage and distribution facilities for a second fuel could be significant and potentially prohibitive, especially for small airports").
[63] *Id.* at 2. Likewise, the 70% of engines approved by the FAA to use GAMI 100-octane unleaded fuel as of October 2021 represent only 20% of total avgas utilization. Dan Namowitz, *FAA Approves Hundreds More Engines to Use Unleaded Avgas*, Aircraft Owners and Pilots Association (AOPA) (Oct. 28, 2021), available at https://www.aopa.org/news-and-media/all-news/2021/october/28/faa-approves-hundreds-more-engines-to-use-unleaded-avgas.
[64] NAS Report at 80, 106.
[65] *Id.* at 73, 76.
[66] *Id*. at 81.
[67] *Id*. at 2, 82.
[68] P. Bertorelli, *GAMI Awarded Long-Awaited STC For Unleaded 100-Octane Avgas*, AVweb (July 27, 2021), available at https://www.avweb.com/aviation-news/gami-awarded-long-awaited-stc-for-unleaded-100-octane-avgas/; Russ Niles, *FAA Approves 600 Engines for GAMI Unleaded Fuel*, AVWeb (Oct. 31, 2021), available at https://www.avweb.com/aviation-news/faa-approves-600-engines-for-gami-unleaded-fuel/.

lacking. Indeed, the FAA recently announced a new public-private partnership – the Eliminate Aviation Gasoline Lead Emissions ("EAGLE") Initiative – which anticipates taking nearly a decade to phase out leaded avgas.[69]

Given the many costs and challenges, there is little incentive for airports and pilots to make effective use of existing unleaded fuel options, or for investors to fund research and development to accelerate advances in unleaded fuel technology.[70] Ultimately, the only way to keep general aviation airports safely open is through the promulgation of uniform national regulatory standards that correct the misaligned incentivize structure for fuel transitioning and quickly eliminate use of leaded fuels.

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The Biden-Harris Administration's commitment to environmental justice is shared by local governments across the country. Elimination of the last remaining leaded transportation fuel is central to fulfilling these promises. Federal action to regulate leaded avgas nationwide is urgently needed to protect communities from exposures over which they have no control, to allow aeronautical services to be provided safely, and to allow healing to occur at the community level. Further, while federal regulatory action is pending, local governments and airport proprietors require the coordinated assistance and support of federal agencies in efforts to mitigate ongoing exposures to lead from avgas in the most impacted communities. It is unacceptable that federal agencies would stand in the way of local action to protect children from lead exposure.

For the reasons set forth above and as further detailed in the Petition, the undersigned therefore urge the EPA to make a positive endangerment finding for leaded avgas on the promised timelines and to expedite issuance of emission standards that will ban the use of this damaging fuel additive. As with the many other sources of lead exposure that EPA has banned, removing the largest lead air pollution source is essential to achieving an environmentally just outcome. It must be accomplished without further delay.[71]

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[69] Fed. Aviation Admin., *FAA, Industry Chart Path to Eliminate Lead Emissions from General Aviation by the end of 2030* (Feb. 23, 2020), https://www.faa.gov/newsroom/faa-industry-chart-path-eliminate-lead-emissions-general-aviation-end-2030.

[70] *See* NAS Report at 83.

[71] *See, e.g.*, Gould, *Childhood Lead Poisoning* at 1162 (finding that each dollar invested in lead paint hazard control results in a return of $17-$221); Centers for Disease Control and Prevention, *CDC Response to Advisory Committee on Childhood Lead Poisoning Prevention Recommendations in "Low Level Lead Exposure Harms Children: A Renewed Call of Primary Prevention"* 2 (2012), available at https://www.cdc.gov/nceh/lead/acclpp/cdc_response_lead_exposure_recs.pdf.

Signed,

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