



**Transcript of EPA Public Hearing on Aircraft  
Emissions**

Thursday, February 17, 2022

*EPA Hearing*

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

VIRTUAL PUBLIC HEARING ON AIRCRAFT EMISSIONS

PROPOSED RULE: EPA-HQ-OAR-2019-0660

Control of Air Pollution From Aircraft Engines:

Emissions Standards and Test Procedures

1:00 P.M.

February 17, 2022

1 PARTICIPANTS

2 ENVIRONMENTAL PROTECTION AGENCY:

3 WILLIAM CHARMLEY, Director, Assessment and  
4 Standards Division

5 RICH COOK, Health Effects, Benefits and Toxics Ctr

6 ROSEMARY HAMBRIGHT KABAN, Attorney-Adviser, Office  
7 of General Counsel

8 BRYAN MANNING, Large Marine and Aviation Center,  
9 Assessment and Standards Division

10 JESSIE MROZ, Environmental Protection Specialist,  
11 Office of Transportation and Air Quality

12 MIKE SAMULSKI, Director, Large Marine and Aviation  
13 Center, Assessment and Standards Division

14

15 ABT ASSOCIATES:

16 BARBARA BAUER, Program Manager

17 HANNAH DERRICK, Analyst

18 FRANK DIVITA, PH.D., PMP, Principal Associate,  
19 Health and Environment

20 MELISSA SPIVEY, Environmental Scientist/Analyst

21 KAYLA THOMPSON, Virtual Event Production  
22 Specialist

1 PARTICIPANTS

2 TESTIFIERS (in order of appearance):

3 WIG ZAMORE, Air Inc. of Boston and STEP of  
4 Somerville

5 MARK SUDOL, Environmental Policy Director,  
6 Aerospace Industries Association (AIA)

7 SCOTT HOCHBERG, Attorney, Center for Biological  
8 Diversity

9 DARBY BECKER, GE Aviation, General Electric  
10 Company

11 DEBI WAGNER, Founding Member, Quiet Skies  
12 Coalition

13 NEELAKSHI HUDDA, Research Assistant Professor,  
14 Tufts University

15 BONNIE SORIANO, Branch Chief, Freight Activity  
16 Branch, California Air Resources Board (CARB) (appeared  
17 with Angela Csondes)

18 CHRIS BLILEY, Senior Vice President-Regulatory  
19 Affairs, Growth Energy

20 SARAH REES, Deputy Executive Officer for Planning,  
21 South Coast Air Quality Management District

22

1

## PARTICIPANTS

2

TESTIFIERS (in order of appearance)

3

[continued]:

4

TIM POHLE, Vice President of Environmental

5

Affairs, Airlines for America (A4A)

6

KENT PALOSAARI, Mira's Garden

7

ANNE KROEKER, Resident, Des Moines, Washington

8

CHARLES WILSON, Environmental Assistance and

9

Protection Board, Forsyth County, North Carolina

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(Planned testimony was forwarded to the EPA at the

11

conclusion of the hearing for inclusion in the docket.)

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## 1 P R O C E E D I N G S

2 MS. THOMPSON: Good afternoon, everyone, and  
3 welcome to the United States Environmental Protection  
4 Agency's virtual public hearing for the "Control of Air  
5 Pollution from Aircraft Engines: Emission Standards  
6 and Test Procedures" proposed rule. My name is Kayla  
7 Thompson from Abt Associates, contractor to the USEPA.  
8 We are now ready to begin. I'll turn it over to EPA to  
9 get us started.

10 MR. CHARMLEY: Good afternoon. On behalf of the  
11 U.S. Environmental Protection Agency, I'd like to  
12 welcome you to today's virtual public hearing. I'm  
13 grateful for everyone who is taking the time out of  
14 their day to testify and participate in today's  
15 hearing. My name is Bill Charmley, and I'm the  
16 director of EPA's Assessment and Standards Division in  
17 the Office of Transportation and Air Quality, and I'll  
18 be presiding -- I'll be the presiding officer for  
19 today's hearing.

20 In addition, I am joined on the panel by my  
21 colleagues: Mike Samulski, the director of the Large  
22 Marine and Aviation Center in the Assessment and

1 Standards Division; Bryan Manning, also from the Large  
2 Marine and Aviation Center; Rich Cook, from the Health  
3 Effects, Benefits and Toxics Center; and Rosemary  
4 Hambright Kaban from EPA's Office of General Counsel.  
5 EPA is also being assisted today by our contractor, Abt  
6 Associates, in running today's virtual public hearing.

7 The purpose of this hearing is to receive comments  
8 from interested parties on the proposed rulemaking,  
9 which is titled: "Control of Air Pollution from  
10 Aircraft Engines: Emission Standards and Test  
11 Procedures," which was published in the Federal  
12 Register on February 3rd of 2022. In this action, the  
13 administrator is proposing particulate -- proposing  
14 particulate matter emission standards which would apply  
15 to certain classes of engines used by civil subsonic  
16 jet airline -- airplanes, such as commercial passenger  
17 and freight aircraft and larger business jets. These  
18 proposed standards would match the international  
19 aircraft engine standards adopted by the International  
20 Civil Aviation Organization in 2017 and in 2020. In  
21 addition, the Agency is proposing to migrate,  
22 modernize, and streamline the existing regulations into

1 a new part of the Code of Federal Regulations. In  
2 addition, this proposed action includes several  
3 technical amendments to align with the International  
4 Civil Aviation Organization.

5 This hearing provides interested persons the  
6 opportunity for oral presentation of views and  
7 arguments. Witnesses will be allowed to make oral  
8 arguments -- or sorry -- oral statements which they may  
9 later expand upon in writing for the record. When you  
10 are finished with your comments, please remember --  
11 members of this panel may ask clarifying questions.  
12 This hearing is not intended to be a discussion of the  
13 proposed rulemaking. While we might ask questions or  
14 request additional data or supporting material, we will  
15 not be responding to comments in the -- in this forum.  
16 Instead, we'll provide a written response to comments  
17 as part of the process of finalizing this proposed  
18 rulemaking. Finally, I would like to remind everyone  
19 that in addition to today's hearing, there is also the  
20 opportunity to send the EPA written comments. The  
21 written comment period closes on April 4th of 2022 at  
22 11:59 p.m., Eastern Time. Details on where to submit



1 written comments can be find -- can be found in the  
2 Federal Register notice that announced this proposal as  
3 well as on the EPA website.

4 Now let me go over how we'll be conducting this  
5 hearing.

6 We are conducting this hearing under Section  
7 307(d) of the Clean Air Act to provide interested  
8 persons an opportunity for oral presentation, in  
9 addition to written submissions, on the proposed  
10 rulemaking. We are having this hearing recorded, and a  
11 written transcript will be available for public  
12 inspection and copying in EPA's Air and Radiation  
13 Docket using Docket Number EPA-HQ-OAR-2019-0660. The  
14 transcript will also be available electronically on  
15 EPA's website and the regulations.gov website in the  
16 docket. The official record of this hearing will be  
17 kept open for 30 days -- 30 days after today to provide  
18 opportunity to submit rebuttal and supplementary  
19 testimony. You may submit this additional testimony to  
20 the same docket for this action by using one of the  
21 methods described in the Federal Register notice  
22 announcing the proposal.

1           The hearing will be conducted informally, and  
2 formal rules of evidence will not apply. I'll be  
3 serving as the presiding officer of today's hearing,  
4 and, as such, I am authorized to apply reasonable  
5 limits on the duration of the statements of any  
6 witness. We're asking that each person try to limit  
7 their verbal testimony to five minutes, but given the  
8 number of testifiers for today, we'll allow you to go a  
9 few minutes beyond five if needed.

10           Finally, while the EPA representatives speaking  
11 today will attempt to ensure the accuracy of their  
12 descriptions and discussion of the proposed rulemaking,  
13 the official version of the proposal is that that was  
14 published in the Federal Register on February 3rd of  
15 2022, and that controls -- it controls in any cases of  
16 conflict between it and what you may hear today.  
17 Please refer to the official version in developing your  
18 written comments on the proposal. Thank you.

19           And with that, I'm going to turn it back over to  
20 Kayla Thompson from Abt Associates to go over some  
21 logistics for today's virtual public hearing.

22           MS. THOMPSON: Thank you. Before we begin, we'd

1 like to go over some logistics for today's hearing. As  
2 a reminder, all attendees are muted automatically. If  
3 you are speaking today, you will receive a notification  
4 on your screen that you are being promoted to the role  
5 of panelist shortly prior to your speaking time. You  
6 must accept that invitation to be able to unmute when  
7 you are called to testify. This will also allow you to  
8 turn on your camera, which we encourage you to do.  
9 Speakers connected by telephone should unmute their  
10 phones when called to testify. If you are having  
11 technical difficulties, please send an email to  
12 public\_hearing@abtassoc.com, or call (919) 294-7712.  
13 If you are not registered to speak but would like to,  
14 please send an email to public\_hearing@abtassoc.com, or  
15 call (919) 294-7712.

16 Now we will begin our public testimony. The  
17 expected speaking order is currently displayed on  
18 screen. We ask that each person limit their verbal  
19 testimony to five minutes. We encourage you to provide  
20 your full written testimony and any additional comments  
21 of any length to Docket Number EPA-HQ-OAR-2019-0660 on  
22 regulations.gov. I will be introducing each speaker in

1 turn. Please speak slowly and clearly so our court  
2 reporter can record these proceedings accurately.

3 The first speaker will be Wig Zamore. Please  
4 state your name and affiliation for the record.

5 MR. ZAMORE: Yes, hi. I'm Wig Zamore from  
6 Somerville, Massachusetts. I'm associated with some  
7 local grassroots groups and also do research with a  
8 collection of research universities in the Boston area,  
9 primarily Tufts. I'll proceed to my comments. I  
10 appreciate the opportunity to speak today.

11 I just want to kind of go back to the beginning.  
12 In Somerville, we have the most highway pollution of  
13 any municipality in Massachusetts, and we found out a  
14 little over a decade ago we had the most excess lung  
15 cancer and heart attack deaths as well. Chelsea was  
16 second in both and is a more intense environmental  
17 justice community. That led us to ask Doug Brugge and  
18 John Durant, then at Tufts, but who did not know each  
19 other and had never worked on ultra-fine particles or  
20 cardiovascular inflammation, to work with us on those  
21 topics, to look at ultra-fine particles from large  
22 local transportation sources and cardiovascular

1 inflammation because cardiovasculars were where most of  
2 the mortalities are from air pollution. We do use a  
3 multi-pollutant framework, of course, and we're  
4 migrating to incorporate noise. You know, they've been  
5 generous enough to include me on 20 papers and in  
6 PubMed, and I've sat for about 35 years on state  
7 oversight committees of both transit and Logan Airport.

8 We have found statistically significant  
9 relationships between cardiovascular biomarkers of  
10 inflammation, including interleukin 6 and C-reactive  
11 protein, and ultra-fine particles within multi-  
12 pollutant frameworks using mobile apps and stationary.

13 Our research has been done at 500 million times of  
14 spatio-temporal granularity of the Harvard six-city  
15 study, and that is one of the challenges of doing  
16 research in primary transportation pollution of every  
17 kind. With regard to your proposal, I certainly  
18 encourage this to move ahead, even though I'm aware  
19 that non-volatile aviation PM is a very small percent  
20 of total aviation PM, and especially of ultra-fine  
21 particles. And all of those ultra-fine particles count  
22 when it -- when it comes to health.

1 Logan, which is the airport here, is a moderately  
2 large U.S. airport. Not Atlanta, or L.A., or O'Hare  
3 size but pretty big otherwise. It burns about 20  
4 million gallons on the tarmac and in the first 3,000  
5 feet, which are relevant to exposures in the  
6 metropolitan area. I know that surface transportation  
7 will probably electrify faster, but I would encourage  
8 people to look at electrification of aviation,  
9 especially with regard to landings, takeoffs, and the  
10 first 3,000 feet of flight. And Jet A can be used for  
11 backup. I think you can recharge in flight. It should  
12 not actually be that hard. I would also encourage you  
13 to all think about how to fund more spatio-temporally-  
14 dense research of CAFEH's type designed to show  
15 significant health effects. You know, you can't do it  
16 with Harvard's six-city study area and temporal  
17 framing.

18 So I'm going to continue. I've got just about a  
19 third left. I hope that's okay.

20 Ultra-fine particles are especially important in  
21 colder climates because the semi-volatiles turn to  
22 ultra-fine so quickly in un-windy winter conditions,

1 especially in the mornings. I appreciate the reference  
2 to the executive orders in your document. And I want  
3 to end with a comment on a missing link between  
4 transportation pollution, environmental justice  
5 populations, and immune biology.

6 So inflammasome biology has evolved largely over  
7 the last 20 years, and for 14 years, it has been  
8 advanced enough to know that of the 22 human  
9 inflammasomes, only one -- NLRP3 -- is a generalist.  
10 And it integrates all immune reactions in animals, all  
11 immune reactions, whether they are driven by pathogens  
12 or whether they're driven by sterile-damage-associated  
13 molecular particles. And especially, they drive  
14 adjuvant biology, they drive mining exposures, and they  
15 drive ambient exposures next to large transportation  
16 sources. And that science, which is the science of  
17 particle size, shape, surface charge pattern, and  
18 composition, is completely unintegrated, even though  
19 it's driving all health reactions to particles in the  
20 air.

21 So thank you very much for the opportunity to  
22 speak today.

1 MS. THOMPSON: Thank you for your comment. Does  
2 EPA have any questions?

3 (No response.)

4 MS. THOMPSON: The next speaker will be Mark  
5 Sudol. Mark, you may now unmute, and please state your  
6 name and affiliation for the record.

7 MR. SUDOL: Yes, my name is Mark Sudol. I'm the  
8 environmental policy director for Aerospace Industries  
9 Association, AIA. Can anybody hear me?

10 MS. THOMPSON: Yes. You may begin.

11 MR. SUDOL: All right. Thank you. Aerospace  
12 Industries Association would like to thank EPA for  
13 providing this forum for public comments on the  
14 proposed rule regarding the "Control of Air Pollution  
15 from Aircraft Engines: Emissions Standards and Test  
16 Procedures." For over 100 years, AIA has served as the  
17 premier advocate, resource, and convener for the  
18 aerospace and A&D industry with over 300 member  
19 companies, including manufacturers and suppliers. AIA  
20 works with industry and government leaders to shape  
21 policy, share the aviation impact on America, and lay  
22 the groundwork for this sector and our country's



1 future. From our first flight through the skies to the  
2 dawn of the jet age, AIA advocates for policies that  
3 prioritize safety, drive aviation innovation, and  
4 transform the way our world moves, connects, and  
5 explores.

6 Air transport is the heart of global economic  
7 growth. It creates employment, facilitates trade,  
8 enables ecotourism, and supports sustainable  
9 development all around the world. Every day, 128,000  
10 flights take off, pairing 12.5 million passengers and  
11 approximately \$18 billion of world trade. The A&D  
12 industry continuously invests in new technology and  
13 infrastructure to increase aircraft and engine  
14 efficiency and reduce carbon emissions. In fact, we've  
15 announced a pledge for commercial aviation  
16 manufacturers to work with airline customers and  
17 governments around the world to achieve net zero carbon  
18 emissions by 2050. We welcome and support EPA's  
19 continued efforts in rulemaking related to the  
20 environment. AIA recently worked with the  
21 International Civil Aviation Organization, ICAO, to set  
22 international CO2 standards. The CO2 rule will ensure

1 that all newly-developed aircraft engines incorporate  
2 the latest commercially-available, proven technologies.

3 AIA appreciates EPA's aligning of the U.S. non-  
4 volatile particulate matter nvPM rules to the ICAO  
5 Committee on Aviation and Environmental Protection --  
6 CAEP -- requirements cited at both CAEP/10 and CAEP/11  
7 meetings. International harmonization of regulations  
8 impacting the A&D industry is very important for the  
9 U.S. to maintain competitiveness in this global  
10 industry. The A&D industry is committed to assisting  
11 EPA and FAA with getting this rule completed before the  
12 January 1, 2023, deadline.

13 AIA also appreciate EPA's structural changes and  
14 streamlining of the existing regulations and addition  
15 of the new nvPM rulemaking with the migration to 40  
16 C.F.R. Part 1031. AIA supports updated supersonic LTO  
17 emission standards through the ICAO CAEP process. In  
18 the interim, AIA supports the inclusion of the current  
19 U.S. supersonic engine emission standards in the  
20 revised rule, including harmonization with the ICAO  
21 provisions for these engines.

22 Thank you for the opportunity to provide comments.

1 AIA and the A&D community stands by to assist in this  
2 rulemaking effort.

3 MS. THOMPSON: Thank you for your comment. Does  
4 EPA have any questions?

5 (No response.)

6 MS. THOMPSON: The next speaker will be Scott  
7 Hochberg. Scott, you may now unmute, and please state  
8 your name and affiliation for the record.

9 MR. HOCHBERG: Hello. My name is Scott Hochberg,  
10 and I'm an attorney with the Center for Biological  
11 Diversity. The Center is a national nonprofit  
12 conservation organization, and its Climate Law  
13 Institute works to protect people, wildlife, and  
14 ecosystems from climate change and fossil fuel  
15 pollution. Thank you for the opportunity to testify  
16 today.

17 Since taking office, President Biden has vowed to  
18 usher in a clean energy revolution and to put  
19 environmental justice concerns front and center. Not  
20 only does EPA's proposed PM rule fail to meet those  
21 goals. It doesn't even take them seriously. The  
22 proposed rule is wholly inadequate on a number of

1 levels, and EPA should withdraw it and replace it with  
2 one that actually reduces air pollution.

3 To begin, the rule does nothing at all to improve  
4 air quality, even though this is the ultimate purpose  
5 of the Clean Air Act and one of the primary missions of  
6 EPA. Instead, it simply adopted the standards of the  
7 International Civil Aviation Organization, or ICAO,  
8 which were written in collaboration with industry  
9 groups. ICAO standards intentionally lag behind  
10 current pollution control technologies, and they allow  
11 emissions to rise as air traffic increases. Technology  
12 already exists to cut PM pollution from planes, and not  
13 only did EPA not require such technologies to be used.  
14 It did not even undertake any analysis of those  
15 options.

16 Second, this rule condones further human suffering  
17 in communities already struggling with the burdens of  
18 air pollution. In the nearly 40 years since EPA last  
19 set PM standards, scientists have produced mountains of  
20 evidence documenting that fine particle pollution  
21 generated by fossil fuel combustion is deadly and  
22 environmentally destructive. Increased PM from

1 aviation pours salt on the wounds of communities that  
2 live near airports, many of which are the same  
3 communities of color and low-income communities the  
4 President has vowed to prioritize. Concentrations of  
5 ultra-fine particles can be four or more times higher  
6 in areas surrounding airports, and in some regions,  
7 like Los Angeles, airplane traffic has grown to be as  
8 significant a contributor to elevated particle  
9 pollution as the entire urban freeway network.

10 Studies show that residents living near airports  
11 are more likely to be admitted to the hospital for  
12 asthma, have higher incidences of cancer and  
13 cardiopulmonary disease, and are more likely to die  
14 prematurely. One study in 2015 estimated that  
15 premature deaths due to fine particle emissions from  
16 aviation number nearly 14,000 per year globally.

17 By setting a rule that will govern many years into  
18 the future, EPA is essentially throwing in the towel  
19 when it comes to improving PM emissions in future  
20 years. The rule refuses to reduce particulate  
21 emissions from new planes beyond what manufacturers are  
22 already doing, and it does not regulate in-service

1 planes. ICAO also estimates that airplane traffic  
2 levels will rebound quickly following the COVID-19  
3 pandemic and more than double in the coming decades.  
4 This means emissions are likely to increase even  
5 further as time goes on, and this rule makes no effort  
6 to counteract that trend.

7 EPA needs to withdraw and reconsider this rule  
8 and, instead, adopt one that sets technology-forcing  
9 standards that apply across the airplane fleet instead  
10 of to individual engines. The standards should:  
11 number one, cover aircraft in operation, not just new  
12 aircraft; number two, reduce emissions through airplane  
13 designs and operational improvements in addition to  
14 engine technologies; and three, include a ratchet  
15 mechanism to reduce total emissions over time. Strong  
16 technology-forcing standards will drive needed changes  
17 and create good, family-sustaining jobs in the aviation  
18 sector.

19 This is the second do-nothing airplane rule the  
20 Biden Administration has supported. EPA must reverse  
21 this trend of embracing weak, industry-developed  
22 standards and, instead, follow its Clean Air Act

1 obligations to set limits that will reduce harmful  
2 pollution from aircraft. The Center calls on EPA to  
3 replace the proposed rule with one that will advance  
4 environmental justice and demonstrate international  
5 leadership on this important issue. Thank you.

6 MS. THOMPSON: Thank you for your comment. Does  
7 EPA have any questions?

8 (No response.)

9 MS. THOMPSON: The next speaker will be Darby  
10 Becker. Darby, you may now unmute, and please state  
11 your name and affiliation for the record.

12 MS. BECKER: Hi. Thank you. I'm Darby Becker  
13 with GE Aviation, an operating unit of General Electric  
14 Company. Thank you for the opportunity to testify on  
15 EPA's proposed particulate matter standards and test  
16 procedures for airplane engines. I'm pleased to  
17 testify on behalf of GE, which is a leader in the  
18 global aviation industry.

19 GE Aviation manufactures jet and turboprop  
20 aircraft engines, components, and integrated systems  
21 for commercial, military, business, and general  
22 aviation aircraft. Nearly 70,000 jet engines from GE

1 Aviation and its partner companies are currently in  
2 service worldwide. GE Aviation is building a world  
3 that works for the future of flight with industry-  
4 leading technology innovation. A significant  
5 proportion of our annual aviation research and  
6 development budget focuses on technologies that improve  
7 fuel efficiency, reduce pollutant emissions, and lower  
8 propulsion noise systems. GE continues to lead the  
9 effort to bring more efficient technology to gas  
10 turbine engines through improvements in engine  
11 architecture, aerodynamics, and materials. Many of our  
12 technological breakthroughs in engine efficiency have  
13 been industry first, such as carbon fiber fan blades,  
14 ceramic matrix composites, and additive manufacturing,  
15 which significantly reduces the weight of the engine.

16 In response to EPA's proposal, GE offers several  
17 comments. First, we commend the Agency for proposing  
18 emission standards that follow the standards adopted by  
19 ICAO. Consistency with ICAO standards is critical to  
20 ensure the preeminence of the U.S. aviation industry.  
21 nvPM emission standards were agreed to in 2019 at  
22 CAEP/11 meeting with both EPA and the FAA instrumental



1 in their development. By achieving consistency with  
2 the ICAO standards, EPA's proposal will assure the  
3 worldwide acceptance of U.S.-manufactured aircraft  
4 engines and, thereby, protect U.S. jobs and strengthen  
5 the American aviation industry, while also reducing its  
6 environmental impact.

7 Second, we urge the EPA to finalize ICAO-  
8 equivalent nvPM emission standards promptly. EPA  
9 action is required to enable the FAA to perform its own  
10 rulemaking which will be necessary to meet the 2023  
11 ICAO deadline. From a certification standpoint,  
12 rulemaking must be completed from both EPA and FAA to  
13 begin the certification process in the U.S. Thus, we  
14 urge EPA to move quickly to finalize the standards.

15 Third, ICAO-equivalent standards are consistent  
16 with the law. They comply with the statutory  
17 requirements of the Clean Air Act and are well within  
18 the broad discretion that EPA exercises in developing  
19 aircraft emissions standards. They're also consistent  
20 with the Agency's past practices in developing aircraft  
21 emission standards and supported by a thorough  
22 administrative record. The standard does -- the

1 standards as written already demand state-of-the-art  
2 technology, and they appropriately reflect the  
3 preeminence of safety in airplane emission standards  
4 under the Clean Air Act.

5 In short, GE supports the EPA's proposal, which we  
6 believe is a win for both competitiveness of the  
7 American aviation industry and for the environment.  
8 This proposal, if adopted promptly, would enable GE to  
9 continue to innovate ways to reduce emissions. Again,  
10 on behalf of GE, I thank you for the opportunity to  
11 testify today. GE will be submitting comments to the  
12 docket in response to the rulemaking with additional  
13 detail. Thank you.

14 MS. THOMPSON: Thank you for your comment. Does  
15 EPA have any questions?

16 (No response.)

17 MS. THOMPSON: The next speaker will be Debi  
18 Wagner. Debi, we do not currently see you on our list  
19 of attendees. However, if you have joined using a  
20 different name, we would invite you to raise your hand  
21 at this time.

22 (Ms. Wagner raised hand virtually.)

1 MS. THOMPSON: Debi, you may now unmute, and  
2 please state your name and affiliation for the record.

3 MS. WAGNER: Hello. My name is Debi Wagner, and I  
4 am a Quiet Skies Coalition founding member. I'm also  
5 an advisory board member of the University of  
6 Washington MOV-UP Multi-Year Ultra-Fine Particulate  
7 Study, focused on aviation-sourced particulate matter.

8 So in the draft rule, I -- can you hear me?

9 MS. THOMPSON: We can.

10 MS. WAGNER: Okay. The draft rule makes a  
11 statement in Section V.C that, "We do not anticipate an  
12 improvement in air quality for those who live near  
13 airports where these aircraft operate," so as a result  
14 of this rule, there'll be no improvement. We do not  
15 know how bad it is right now. We don't know whether or  
16 not the particulate emissions from aircraft in our  
17 neighborhoods are violating the Federal standards or  
18 not, so I'd like to go back a little bit in history.

19 The standard airport emission model that was used  
20 for many years -- EDMS -- had all particulate emissions  
21 for every jet aircraft eliminated by FAA after 1993.

22 And so there were 58 major airport expansions going on

1 during that period of time where the particulate was  
2 eliminated out of the model, and so there were no  
3 estimates around airports for particulate loads as far  
4 as the Federal standards go for a long period of time,  
5 maybe two decades. I don't know if that applied to  
6 every airport because the model input was open to the  
7 user, and consultants could add particulate if they  
8 wanted to.

9 The problem is there was no oversight. There's no  
10 controls, no local monitoring, and no source  
11 regulation. So when EPA is responsible -- used to be  
12 responsible for certifying new aircraft engines for  
13 certain emission levels, it never considered the  
14 thousands of those engines operating at a single site.  
15 There's no monitoring regularly done around airports,  
16 many airports that I'm aware of around the country.

17 But the one modeling exercise that was done here around  
18 Sea-Tac Airport, before elimination of all the  
19 particulate from the model, indicated violations of the  
20 -- of the National Ambient Quality Standards in the  
21 neighborhoods around the airport. And it was after  
22 that time that FAA eliminated all the particulate from

1 the model with the statement that they found it to be  
2 inaccurate.

3 So when Sea-Tac Airport expanded and added another  
4 runway and another 100,000 operations per year, there  
5 was never any particulate estimated in the existing or  
6 future condition. There was no oversight by EPA Region  
7 10, and there was no follow through by anybody for  
8 modeling exercises, that I'm aware of, that happened in  
9 the future. The problem with this whole system setup  
10 is that without source regulation, without local  
11 monitoring, you do not know whether or not airports are  
12 in compliance with the Federal standards.

13 Deferring to ICAO on a rule that does nothing to  
14 improve air quality where air quality is already  
15 degraded is useless. EPA should be working on an  
16 ultra-fine particulate standard because that is the  
17 emerging science right now. They should be  
18 investigating and doing follow through on many of the  
19 local investigations going on by the UW, and by Boston,  
20 and by L.A. Instead, I noticed South Coast Air Quality  
21 Management District is on this call. They have just  
22 deferred LAX on NAAQS violations to reductions in other

1 areas. So EPA needs to step in. They need to take a  
2 much more active role. We do have health impacts that  
3 were discovered in our area that are significantly --  
4 statistically relevant to the types of health effects  
5 expected to be seen from particulate.

6 And so I just -- I would like to add that I  
7 completely concur and agree with Scott on all of the  
8 gaps and problems that EPA is allowing in the rules. I  
9 think as citizens of this country paying EPA to do the  
10 job of protecting the environment, knowing that each  
11 person has a right to a healthful environment, they  
12 have dropped the ball on the particulate matter issue  
13 from aircraft for decades. And it's time to really  
14 knuckle down, do a much stronger standard than what  
15 ICAO, an industry-driven-only advocacy group that  
16 doesn't have any regulatory authority to be able to  
17 compel the industry to make changes, and defers for  
18 years and was a disaster with CO2.

19 EPA needs to be proactive and take a lead, and  
20 develop a much stronger standard than what they have as  
21 an international proposal. They need to protect the  
22 citizens of this country from these health-debilitating

1 impacts from aircraft particulate, and it doesn't stop  
2 there. If you've got 600,000 gallons of Jet A fuel  
3 being pumped at local airports, you have a CO2  
4 inventory that's similar to a coal-fired power plant.  
5 I'm surprised that there isn't hair raising going on at  
6 these agencies. We have a 1.4 percent higher death  
7 rate around SEA-TAC Airport that compelled a COVID  
8 pandemic emergency, but yet EPA is willing to allow  
9 this degradation of health and these serious health  
10 impacts that are statistically significant around major  
11 airports all across the country without any regulatory  
12 authority, without any study or research, without any  
13 compelling documentation to prove that it's safe to  
14 live here, and this is unacceptable.

15 This rule is unacceptable. EPA needs to withdraw  
16 it. They need to write a stronger rule on PM 10, PM  
17 2.5, and they need to quickly develop a rule for the  
18 ultra-fine plume that is hanging over hundreds of  
19 thousands of people at every airport -- major airport  
20 across this country. Thank you for your time.

21 MS. THOMPSON: Thank you for your comment. Does  
22 EPA have any questions?

1 (No response.)

2 MS. THOMPSON: As a reminder, if you are speaking  
3 today, you will receive a notification on your screen  
4 that you are being promoted to the role of panelist  
5 shortly prior to your speaking time. You must accept  
6 that invitation to be able to unmute when you are  
7 called to testify. This will also allow you to turn on  
8 your camera, which we encourage you to do. Speakers  
9 connected by telephone should unmute their phones when  
10 called to testify. If you are having technical  
11 difficulties, please send an email to  
12 public\_hearing@abtassoc.com, or call (919) 294-7712.  
13 If you are not registered to speak but would like to,  
14 please send an email with your name and phone number to  
15 public\_hearing@abtassoc.com, or call (919) 294-7712.

16 The next speaker will be Neelakshi Hudda. You may  
17 now unmute, and please state your name and affiliation  
18 for the record.

19 MS. HUDDA: Greetings. I am Neelakshi Hudda, and  
20 I'm a research assistant professor in the Department of  
21 Civil and Environmental Engineering at Tufts  
22 University. I research air quality impacts and health



1 effects of transportation emissions, and have  
2 investigated the impacts of aviation emissions in Los  
3 Angeles and Boston, and study the impacts on ambient as  
4 well as indoor air quality.

5 With much appreciation for this opportunity to  
6 testify, I would like to begin by recognizing that this  
7 proposed rule is well written and is based on sound  
8 science. The engine test data and new standards are  
9 clearly shown, and the testing and certification  
10 process is also clearly detailed. Further, the  
11 proposal affirms the environmental justice aspects,  
12 which is also commendable. However, I would like to  
13 make three points that I hope would be addressed in  
14 greater detail.

15 First, the expected benefits to air quality are  
16 anticipated to occur via business-as-usual aircraft  
17 fleet turnover. The methodology for how emissions  
18 would be accounted in national emissions inventory are  
19 sufficiently detailed in the proposal. However, there  
20 is no discussion of whether near-airport communities  
21 will see any net improvements in their air quality.  
22 That is, what improvements due to cleaner engines

1     outweigh the increased flight activity in the business-  
2     as-usual scenario? There's also no discussion of the  
3     pace of resulting air quality improvements. When are  
4     the near-airport communities likely to see improvements  
5     in air quality in the business-as-usual fleet turnover  
6     approach?

7             My second comment pertains to the following  
8     sentence on page 6337. I quote, "It is appropriate to  
9     gain experience from the implementation of these non-  
10    volatile standards before considering whether to adopt  
11    more stringent non-volatile PM mass and/or number  
12    standards, or whether another approach to PM regulation  
13    would better address the health risks of PM emissions  
14    from aircraft engines." I want to focus on the  
15    following idea embedded in that sentence: "Experience  
16    is required to evaluate the success of this proposed  
17    rule." It is a perfectly reasonable stance, but no  
18    detail is offered on what metrics would be gathered for  
19    evaluation during the experience period nor the  
20    duration of the experience period specified. For  
21    example, would monitoring air quality in near-airport  
22    communities and tracking the changes be an appropriate

1 criteria of success? The last phrase of the sentence  
2 mentions health risks. What approach would be taken to  
3 quantify changes in risk that would determine if this  
4 non-volatile PM standard was successful or if more  
5 stringent standards or another approach is required?

6 My third point pertains to the volatile fraction  
7 of the particulate matter emissions which are not  
8 addressed by this proposed rule. The case made about  
9 the complexity of characterizing volatile PM in this  
10 proposal is reasonable. Nonetheless, the elevated  
11 ultra-fine concentrations that likely are mostly  
12 composed of volatile particulate matter in communities  
13 downwind of the airports would remain unaddressed by  
14 this proposed rule. Evidence is growing for the  
15 association of ultra-fine particles with adverse health  
16 effects and also for association of specifically  
17 aviation-generated ultra-fine particles with adverse  
18 health effects. The proposed rule is not expected to  
19 reduce ultra-fine concentrations or associated health  
20 risks in near-airport communities.

21 In summary, this proposed rule discusses non-  
22 volatile PM emissions standard clearly. However, it is

1 not clear at all if a business-as-usual fleet turnover  
2 approach will lead to a net improvement in air quality  
3 in near-airport communities or overall reduced  
4 emissions. It is not clear how the success of this  
5 standard would be evaluated. And lastly, the proposed  
6 rule leaves important volatile particulate matter  
7 exposures and health risks unaddressed.

8 MS. THOMPSON: Thank you for your comment. Does  
9 EPA have any questions?

10 (No response.)

11 MS. THOMPSON: The next speakers will be Angela  
12 Csondes and Bonnie Soriano. You may now unmute, and  
13 please state your name and affiliation for the record.

14 MS. SORIANO: Hello, USEPA Panel and meeting  
15 participants. My name is Bonnie Soriano, and I'm a  
16 branch chief in the Freight Activity Branch within the  
17 California Air Resources Board. We'd like to thank you  
18 for the opportunity to comment on the proposed  
19 rulemaking for particulate matter emissions standards  
20 for aircraft engines. While we appreciate your  
21 efforts, we would also like to emphasize the following  
22 points:

1 Additional reductions in California are needed to  
2 meet our air quality, climate, and toxic health  
3 exposure requirements. California particularly  
4 experiences the burden of aircraft emissions, largely  
5 because of the high volume of passenger and cargo air  
6 traffic in our state. According to 2019 Federal  
7 Aviation Administration data, the state's total  
8 commercial passenger trips represented about 13 percent  
9 of U.S. commercial passengers, and airports in the  
10 state handled about 11 percent of all U.S. cargo.  
11 Statewide, many areas in California are currently  
12 classified as non-attainment under the National Ambient  
13 Air Quality Standards for particulate matter, also  
14 called "PM." While these -- within these areas, there  
15 are many low-income and disadvantaged communities that  
16 are disproportionately burdened by PM emissions.

17 Aircraft are a major contributor of PM emissions,  
18 and these emissions are known to cause immediate and  
19 long-term detrimental health effects and severe  
20 environmental damage. For the safety of our  
21 communities and the environment, PM reductions from  
22 aircraft are needed. CARB recognizes that EPA's intent

1 in this rulemaking is to harmonize with International  
2 Civil Aviation Organization -- also called "ICAO" --  
3 standards to facilitate certification and global-scale  
4 sales of U.S.-manufactured aircraft. However, under  
5 the Chicago Convention, domestic standards must be at  
6 least as stringent as ICAO's and not necessarily  
7 identical. EPA should stop outsourcing aircraft  
8 emissions policies to ICAO.

9 ICAO adopts only technology-following standards  
10 that lag behind proven advances and do nothing to  
11 reduce PM emissions. For that reason, simply codifying  
12 ICAO standards as proposed would not meet EPA's Clean  
13 Air Act obligations to protect public health and  
14 welfare from these emissions. To achieve the necessary  
15 reductions from this sector, which only the Federal  
16 Government can do, the proposed standards need to  
17 include both technology-forcing standards for new-type  
18 design and in-production aircraft, and emission  
19 standards for in-service engines. Waiting on the  
20 business-as-usual fleet turnover approach will not  
21 achieve the magnitude of emissions reductions that we  
22 need.

1           We urge EPA to pursue more aggressive emission  
2 standards to reduce real-world emissions in our  
3 communities and around the country. We ask EPA to  
4 require the newest and cleanest aircraft engines and  
5 emission-reducing technologies to all in-service, in-  
6 production, and new-type design engines. In addition,  
7 we recommend exploring the use of sustainable aviation  
8 fuel which has the potential to achieve significant  
9 reductions in PM and sulfur oxides.

10           We appreciate the opportunity to comment here on  
11 the proposed rule and look forward to assisting EPA in  
12 any way. This includes technology assessments, health  
13 risk studies, emissions inventory, and data analysis.  
14 CARB staff is committed to supporting the EPA in  
15 efforts to reduce emissions from the aviation sector.  
16 California urgently needs meaningful actions by our  
17 Federal partners to ensure all areas of our state can  
18 breathe clean air. Thank you very much.

19           MS. THOMPSON: Thank you for your comment. Does  
20 EPA have any questions?

21           (No response.)

22           MS. THOMPSON: The next speaker will be Chris

1 Bliley. You may now unmute, and please state your name  
2 and affiliation for the record.

3 MR. BLILELY: My name is Chris Bliley. I'm the  
4 senior vice president of regulatory affairs for Growth  
5 Energy. Thank you for the opportunity to appear today.  
6 Growth Energy is the largest renewable fuel  
7 organization in the world, representing 89 of the most  
8 innovative biofuel producers and thousands of biofuel  
9 supporters around the country. Our diverse membership  
10 is energized by this new aviation frontier to help the  
11 U.S. meet aggressive climate and pollution-reduction  
12 goals in the hard-to-electrify sector.

13 As the proposal and studies show, there are  
14 numerous negative health and environmental impacts from  
15 PM emissions from combustion and mobile sources. Low-  
16 carbon, plant-based biofuels are among the best and  
17 most cost-effective options for reducing both PM and  
18 greenhouse gas emissions from the aviation sector.  
19 U.S.-based airlines used more than 18 billion gallons  
20 of jet fuel in 2019. Accessing the aviation market  
21 through ethanol for sustainable aviation fuel provides  
22 America's ethanol industry the opportunity to be



1 utilized in more than just light-duty cars and trucks.

2 As we've already seen with higher biofuel blends  
3 and light-duty vehicles, the use of sustainable  
4 aviation fuel holds tremendous potential for reducing  
5 air pollution and improving our air quality. Ethanol  
6 to jet fuel as SAF has the potential to replace 50  
7 percent of the petroleum used in jet fuel. And while  
8 discussion of SAF has largely focused on addressing  
9 climate change through reduction of greenhouse gas  
10 emissions, at a 50-percent blend, SAF can reduce PM  
11 emissions by nearly 70 percent, reduce sulfur by 37  
12 percent, and provide an 11-percent decrease in carbon  
13 monoxide. These are meaningful reductions that would  
14 be a win-win-win for our environment, human health, and  
15 for our rural economy.

16 With the appropriate investment in critical  
17 research and development and the right policy  
18 environment, our industry can work to remove these  
19 harmful emissions from our aviation fleet. However, to  
20 achieve the Biden Administration's goal of three  
21 billion gallons of SAF production by 2030 and 35  
22 billion gallons by 2050 to achieve net zero greenhouse

1 gas emissions in aviation, we'll need game-changing  
2 solutions. To make our emission reduction goals a  
3 reality, we first need a healthy and thriving biofuel  
4 industry to be able to make the long-term investments  
5 in research and development.

6 Specifically, I want to highlight two vital fuel  
7 policy considerations alongside this proposal for the  
8 Agency to consider. One, a strong and growing  
9 renewable fuel standard. To reach the volumes of SAF  
10 being discussed, it's critical to have the strong  
11 foundation of the RFS. Two, accurate life-cycle  
12 emissions modeling. We strongly support the use of the  
13 Department of Energy's Argonne National Labs GREET  
14 Model, which appropriately accounts for innovations in  
15 American agriculture and biofuel production.

16 The biofuel industry stands ready to work with EPA  
17 and the Biden Administration to meet our national  
18 commitments of aggressive emission reduction goals  
19 while supporting economic development, working  
20 families, and renewable energy. With forward-leaning  
21 policies that support innovation and access to new  
22 markets, our industry can provide aviation fuels that

1 will decrease emissions, create more clean energy jobs,  
2 and spur economic activity in rural communities today  
3 and well into the future. Thank you for your  
4 consideration of these important fuel policies.

5 MS. THOMPSON: Thank you for your comment. Does  
6 EPA have any questions?

7 (No response.)

8 MS. THOMPSON: The next speaker will be Sarah  
9 Rees. Sarah, you may now unmute, and please state your  
10 name and affiliation for the record.

11 MS. REES: Good afternoon. I am Sarah Rees,  
12 deputy executive officer for planning at South Coast  
13 Air Quality Management District. We are the local  
14 agency responsible for air quality in the Greater Los  
15 Angeles Area. Thank you for the opportunity to testify  
16 regarding the proposed rule, "Control of Air Pollution  
17 from Aircraft Engines."

18 The 17 million residents in our jurisdiction  
19 breathe some of the worse air in the U.S. Mobile-  
20 source emissions contribute over 80 percent of the  
21 smog-forming emissions in our region. Heavy-duty  
22 trucks are currently responsible for the bulk of these

1 emissions, but emissions from aircraft are also  
2 significant and growing. While trucks are getting  
3 cleaner due to current and future regulation, emissions  
4 from aircraft are not keeping pace, and aircraft  
5 emissions are the one source category of emissions that  
6 are increasing. By 2037, both aircraft and ocean-going  
7 vessel emissions will be the top sources of NOx in our  
8 area. Aircraft emissions must, therefore, be addressed  
9 so that South Coast and other areas of the country can  
10 meet Federal clean air standards.

11 We understand that the purpose of this rule is to  
12 harmonize and align PM standards for aircraft engine  
13 emissions with those established by ICAO. While more  
14 stringent standards are welcome news, this proposed  
15 rule is technology following and is, therefore, not  
16 expected to result in further reductions from these  
17 engines. We are, therefore, concerned that there is a  
18 missed opportunity for EPA to switch to a technology-  
19 forcing approach to further reduce emissions, coupled  
20 with rigorous testing of new technology, to ensure  
21 public safety.

22 We are further concerned that this rule, like

1 others for aircraft engines, targets only one pollutant  
2 in isolation without considering inadvertent increases  
3 in others. For example, TAPS II LEAP combustor  
4 aircraft engines significantly increase fuel efficiency  
5 to meet greenhouse gas standards while simultaneously  
6 increasing NOx emissions. A Boeing 737 8-MAX engine  
7 increases landing and takeoff NOx emissions by about 50  
8 percent compared to comparable aircraft. It is,  
9 therefore, imperative that EPA consider an integrated,  
10 multi-pollutant approach to aircraft engine standards  
11 that avoid such inadvertent increases.

12 We note also that the proposed rule includes more-  
13 stringent emission standards for new-type design  
14 engines compared to in-production engines. However,  
15 EPA acknowledges that there are only a few in-  
16 production engines that do not currently meet the new-  
17 type design standard. Given this, we believe that EPA  
18 should hold in-production engines to the same standard  
19 as new-type design engines. As a final note, airports  
20 are frequently surrounded by disadvantaged communities.

21 EPA should consider additional policies to reduce  
22 emissions and impact -- minimize impacts to these

1     overly-burdened communities.

2             In summary, while we appreciate more stringent  
3     standards, we urge EPA to adopt a comprehensive, multi-  
4     pollutant approach to aircraft and develop rules that  
5     address the growing emissions from this area. Thank  
6     you.

7             MS. THOMPSON: Thank you for your comment. Does  
8     EPA have any questions?

9             (No response.)

10            MS. THOMPSON: The next speaker will be Kent  
11     Palosaari. Kent, we do not currently have you listed  
12     among our list of attendees. However, if you have  
13     joined using a different name, we would invite you to  
14     raise your hand at this time.

15            (No response.)

16            MS. THOMPSON: We will move on to the next  
17     speaker. The next speaker will be Charles Wilson.  
18     Charles, you may now unmute, and please state your name  
19     and affiliation for the record.

20            (No response.)

21            MS. THOMPSON: As a reminder, you should have  
22     received a notification on your screen that you are

1 being promoted to the role of panelist. You must  
2 accept that invitation to be able to unmute.

3 (No response.)

4 MS. THOMPSON: We will move on to the next  
5 speaker, and, Charles, we'll reach out to you if you  
6 need additional support.

7 The next speaker will be Tim Pohle. Tim, you may  
8 now unmute, and please state your name and affiliation  
9 for the record.

10 MR. POHLE: Hello. Good afternoon. Good morning  
11 to some. My name is Tim Pohle, vice president of  
12 environmental affairs at Airlines for America, which  
13 represents the Nation's major commercial passenger and  
14 cargo airlines. Thank you for holding the hearing. We  
15 appreciate this opportunity to testify in strong  
16 support of EPA's proposed adoption of internationally-  
17 agreed particulate matter standards for new aircraft  
18 engines and urge the Agency to finalize its proposal  
19 consistent with the law.

20 U.S. airlines are a critical engine of prosperity  
21 and progress. We've long recognized that continued  
22 progress depends on acknowledging and embracing our

1 responsibility to address environmental issues,  
2 including local air quality. Before the COVID-19  
3 pandemic, while contributing just two percent of  
4 domestic greenhouse gas emissions, we drove about five  
5 percent of the Nation's GDP, transporting 2.5 million  
6 passengers and 58,000 tons of cargo per day, helping to  
7 drive \$1.7 trillion in annual economic activity and  
8 more than 10 million jobs. Our ability to deliver such  
9 a strong economic punch with such a low emissions  
10 profile results from a decades-long commitment to  
11 acquire -- acquiring and implementing cutting-edge  
12 technologies, improving our operations, and supporting  
13 infrastructure advances. This commitment has enabled  
14 U.S. airlines to improve our fuel efficiency by over  
15 135 percent from 1978 through 2019.

16 As leaders of a global aviation coalition, we have  
17 been committed to aggressive emissions goals for many  
18 years. In March 2021, A4A and our carriers announced a  
19 significant strengthening of our goals. Together with  
20 our member carriers, we pledged to work across the  
21 aviation industry and with government leaders in a  
22 positive partnership to achieve net zero carbon



1 emissions by 2050. A4A carriers also pledged to work  
2 with the government and other stakeholders toward a  
3 rapid expansion of the production and deployment of  
4 commercially-viable, sustainable aviation fuel -- or  
5 SAF -- to make two billion gallons of SAF available to  
6 U.S. operators in 2030.

7 On September 9th, 2021, as a complement to the  
8 Federal Government's announcement of the SAF Grand  
9 Challenge, A4A and its members increased the SAF -- the  
10 A4A SAF challenge goal by an additional 50 percent,  
11 calling for three billion gallons of cost-competitive  
12 SAF to be available to U.S. aircraft operators in 2030.

13 This is particularly important in this context as PM  
14 emissions associated with SAF combustion are  
15 significantly lower than PM emissions associated with  
16 combustion of traditional jet fuel.

17 These new goals were adopted in the midst of the  
18 most severe economic crisis the commercial aviation  
19 sector has ever faced, demonstrating the strength of  
20 the airline industry's commitment to the environment  
21 and depth of our recognition that environmentally-  
22 responsible growth is essential to the vitality of our

1 sector. It is that -- it is in that spirit that we are  
2 pleased to strongly support EPA's proposed PM emission  
3 standards for aircraft engines. A4A looks forward to  
4 commenting on EPA's proposal in full when we submit our  
5 written comments in the docket. For purposes of this  
6 hearing, though, A4A offers the following preliminary  
7 points:

8 First, A4A and our members remain committed to  
9 limiting and reducing impacts on local air quality and  
10 view the proposed PM aircraft emission standards as an  
11 important contributor to those efforts. Second, A4A  
12 strongly supports the proposal to adopt the aircraft PM  
13 certification standards as agreed by the International  
14 Civil Aviation Organization -- ICAO. The ICAO process  
15 for setting aircraft standards is rigorous and ensures  
16 they are technically sound. Further, the ICAO criteria  
17 for adopting such standards align with the criteria  
18 under Section 231 of the U.S. Clean Air Act. Even more  
19 critically, the standards will ensure that aviation  
20 safety is maintained even as environmental progress is  
21 ensured.

22 As acknowledged in the proposal, it is critical to

1 the competitiveness of the U.S. aircraft and aircraft  
2 engine manufacturers that the U.S. follow these  
3 international standards which, in turn, improve  
4 airlines' ability to acquire U.S.-manufactured aircraft  
5 and help foster competitive market prices. Experts  
6 from the USEPA and Federal Aviation Administration  
7 played leading roles in the ICAO process leading to the  
8 adoption of the PM standard. A4A participated as an  
9 observer. These efforts ensured that ICAO's PM  
10 standard incorporated all of these critical features  
11 and -- so that it could be adopted into U.S. law.

12 Third, we're going to have some additional  
13 comments on the proposal and look forward to presenting  
14 these in written form. But in sum, A4A and our members  
15 remain committed to limiting and reducing our  
16 emissions, including PM emissions. We strongly support  
17 the proposed rules as an important part of that  
18 commitment and urge the Agency to finalize its proposal  
19 consistent with the law.

20 Thank you for the opportunity to comment on this  
21 very important proposal. Thank you very much.

22 MS. THOMPSON: Thank you for your comment. Does

1 EPA have any questions?

2 (No response.)

3 MS. THOMPSON: The next speaker will be Kent  
4 Palosaari. Kent, you may now unmute, and please state  
5 your name and affiliation for the record.

6 MR. PALOSAARI: Hello. Can you hear me?

7 MS. THOMPSON: We can.

8 MR. PALOSAARI: Okay. Great. My name is Kent  
9 Palosaari. Up until recently, I was a resident next to  
10 Sea-Tac Airport here in Washington, one of the fastest-  
11 growing airports in the Nation.

12 I started to notice that there was a lot of health  
13 issues both personally and in the neighborhood, so I  
14 took it upon myself to work with different  
15 organizations to gather PM information around the  
16 airport. Typically, we found that if we just used,  
17 like, the OSHA amount for PM 2.5., we are typically two  
18 to three times higher than what was acceptable for  
19 chronic exposure. With COVID, interestingly enough,  
20 there was a reduction of flying, and when it got down  
21 to about 20 -- 25 percent of what was normal, the PM  
22 level was acceptable at that point. When we're talking

1 about regulation, the ability to reduce it to a level  
2 that's livable means drastic regulating or reducing  
3 compared to what's being proposed currently.

4 I also want to make a comment on SAF. We don't  
5 know for sure that it will reduce the ultra-fine  
6 particulates that are especially damaging, and you're  
7 currently not even close to having it be the majority  
8 of any kind of flying fuel. So if we're increasing the  
9 number of flights and only reducing at a level that's  
10 minimal, the net result is an increase of pollution  
11 that's particularly harmful to the communities around  
12 airports. We need to have community health be the  
13 primary mover on all of this. We can never put wealth  
14 before health. We need to think in terms of the EPA  
15 caring for the living environment that people are  
16 living in around the airport.

17 And one last point is when we reduce -- there are  
18 times when the pollution level is not as high in the  
19 air, but it is going into the soil to a point where we  
20 cannot grow our fruits and vegetables, we cannot play  
21 in our backyards because it's a toxic environment. So  
22 as we proceed with any kind of regulation, we need to

1 be highly aware that communities need more than just a  
2 slight reduction inclusion. We need a radical change  
3 in terms of the number of toxins in our environment.

4 Thank you very much.

5 MS. THOMPSON: Thank you for your comment. Does  
6 EPA have any questions?

7 (No response.)

8 MS. THOMPSON: As a reminder, if you are speaking  
9 today, you'll receive a notification on your screen  
10 that you are being promoted to the role of panelist  
11 shortly prior to your speaking time. You must accept  
12 that invitation to be able to unmute when you are  
13 called to testify. Speakers connected by telephone  
14 should unmute their phones when called to testify. If  
15 you are having any technical difficulties, please send  
16 an email to [public\\_hearing@abtassoc.com](mailto:public_hearing@abtassoc.com), or call (919)  
17 294-7712. If you are not registered to speak, but you  
18 would like to, please send an email with your name and  
19 phone number to [public\\_hearing@abtassoc.com](mailto:public_hearing@abtassoc.com), or call  
20 (919) 294-7712.

21 The next speaker will be Charles Wilson. Charles,  
22 you should have the ability to unmute, and when you're

1 ready, please do so and state your name and affiliation  
2 for the record.

3 (No response.)

4 MS. THOMPSON: It appears that there may still be  
5 some technical difficulties. However, we encourage you  
6 to provide your full written testimony and any  
7 additional comments of any length to Docket Number EPA-  
8 HQ-OAR-2019-0660 on regulations.gov.

9 At this time we have no one else scheduled to  
10 speak. If there is anyone who did not register to  
11 speak but would like to, please send an email with your  
12 name and phone number to public\_hearing@abtassoc.com,  
13 or call (919) 294-7712. We'll now pause to see if  
14 anyone else would like to make a statement.

15 (Pause.)

16 MS. THOMPSON: The next speaker will be Anne  
17 Kroeker, and you may now unmute, and please state your  
18 name and affiliation for the record.

19 MS. KROEKER: (Inaudible.) I don't know what I  
20 look like, but I'll start my video, Austin. Whoops.  
21 There we go. Are you -- am I ready to go?

22 MS. THOMPSON: Yes.

1 MS. KROEKER: Thank you very much. Sorry. Hi.  
2 My affiliation is I'm a resident of Des Moines,  
3 Washington. I live under the flight path which has  
4 increased many-fold over the past few years, and I am  
5 also a member of 350 Seattle and have over -- for over  
6 20 years as a professional co-founder of a private  
7 foundation, Partners With Wildlife and Natural Health  
8 Preservation and Conservation.

9 I would like to make -- support very much what  
10 Kent Palosaari has just underlined, that this -- that  
11 the role of the EPA is not to follow the economic  
12 dollars of private industry but to cover -- which it  
13 doesn't talk about the loss of local businesses to  
14 development of aircraft operations, and certainly  
15 doesn't cover the health costs which could easily run  
16 in billions, but no one has actually taken account of  
17 that. That would be something that EPA could do. But  
18 they need to do the hard job of holding the development  
19 to be responsible to the health of the communities and,  
20 in fact, the health of the planet because we're not  
21 talking -- haven't been talking yet about the carbon  
22 emissions, although that is certainly a factor, of 2.5



1 particle emissions because they also are related to the  
2 carbon emissions.

3 The sustaining -- so-called sustainable aviation  
4 fuels or biofuels are not also addressing carbon  
5 emissions because the burn at the tailpipe is still the  
6 same. And the global carbon accounting still covers  
7 what comes out of the tailpipe, not production  
8 pathways. So it is a bit of a red herring when we go  
9 down this -- what will save us will be alternate  
10 biofuels because it doesn't take care of the growth  
11 that has been talked about when you have multiple  
12 aircraft operations. And even recently I saw that  
13 ethanol production pathways could perhaps be producing  
14 more greenhouse gas emissions than the gasoline or jet  
15 fuel, either one of those standard oil-based  
16 productions.

17 Two-point-five particle emissions is really  
18 nothing. It's almost not worth spending time on  
19 because, besides not addressing the whole problem, it  
20 doesn't get to the ultra-fines. And even our HEPA  
21 filters, if you want to know that, we have them  
22 everywhere, and that's already accepted. Going with

1 the standard low-level international standard for  
2 engines in the future really doesn't address the issues  
3 that also Debi Wagner underscored and many of the  
4 others have that we already have.

5 Thank you very much for letting me speak at this,  
6 especially at the last minute not being on the list.  
7 So I appreciate your time and work on these issues.

8 MS. THOMPSON: Thank you for your comment. Does  
9 EPA have any questions?

10 (No response.)

11 MS. THOMPSON: The next speaker will be Charles  
12 Wilson. Charles, you may unmute, and please state your  
13 name and affiliation for the record.

14 (No response.)

15 MS. THOMPSON: And, Charles, it appears that you  
16 are unmuted or you were briefly unmuted, so you should  
17 be able to select the unmute button on your screen to  
18 provide your testimony.

19 (No response.)

20 MS. THOMPSON: It looks like we may still be  
21 encountering some difficulties, but as a reminder, we  
22 encourage you to provide your full written testimony

1 and any additional comments of any length to Docket  
2 Number EPA-HQ-OAR-2019-0660 on regulations.gov.

3 At this time, we have no one else scheduled to  
4 speak. If there is anyone who did not register to  
5 speak but would like to, please send an email with your  
6 name and phone number to public\_hearing@abtassoc.com,  
7 or call or call (919) 294-7712. We'll now pause to see  
8 if anyone else would like to make a statement.

9 (Pause.)

10 MS. THOMPSON: We are now at the end of our  
11 session. EPA, are you ready to adjourn the virtual  
12 hearing?

13 MR. CHARMLEY: Yes. I wanted to thank everyone  
14 for -- certainly everyone who participated by speaking  
15 today and sharing your views with EPA, and thank you  
16 for all the members of the public who participated by  
17 listening to today's public hearing. And, again, just  
18 a reminder that the -- people have the opportunity to  
19 continue to provide public comments until the close of  
20 the public comment period, and I want to thank everyone  
21 from Abt for helping us and for my colleagues on the  
22 panel. But with that, we can go ahead and close

1 today's hearing, so thank you.

2 (Whereupon, at 2:16 p.m., the hearing was  
3 adjourned.)

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<p><b>allow</b> 9:8 10:7 19:10 30:8 31:7 <b>allowed</b> 7:7 <b>allowing</b> 29:8 <b>alongside</b> 41:7 <b>alternate</b> 56:9 <b>ambient</b> 14:15 27:20 32:3 36:12 <b>amendments</b> 7:3 <b>America</b> 4:5 15:21 46:12 <b>American</b> 24:5 25:7 41:15 <b>America's</b> 39:22 <b>amount</b> 51:17 <b>analysis</b> 19:14 38:13 <b>Analyst</b> 2:17 <b>and/or</b> 33:11 <b>Angela</b> 3:17 35:11 <b>Angeles</b> 20:7 32:3 42:15 <b>animals</b> 14:10 <b>ANNE</b> 4:7 54:16 <b>announced</b> 8:2 16:15 47:18 <b>announcement</b> 48:8 <b>announcing</b> 8:22 <b>annual</b> 23:5 47:7 <b>anticipate</b> 26:11 <b>anticipated</b> 32:16 <b>anybody</b> 15:9 28:7 <b>appear</b> 39:5 <b>appearance</b> 3:2 4:2 <b>appeared</b> 3:16 <b>appears</b> 54:4 57:15 <b>applied</b> 27:5 <b>apply</b> 6:14 9:2, 4 21:9 <b>appreciate</b> 11:10 14:1 17:13 35:20 38:10 45:2 46:15 57:7 <b>appreciates</b> 17:3 <b>appreciation</b> 32:5 <b>approach</b> 33:6, 12 34:2, 5 35:2 37:20 43:19 44:10 45:4 <b>appropriate</b> 33:8, 22 40:16 <b>appropriately</b> 25:2 41:14 <b>approximately</b> 16:11 <b>apps</b> 12:12 <b>April</b> 7:21 <b>architecture</b> 23:11 <b>area</b> 11:8 13:6, 16 29:3 42:15 43:8 45:5 <b>areas</b> 20:6 29:1 36:11, 14 38:17 43:9 <b>Argonne</b> 41:13 <b>arguments</b> 7:7, 8 <b>asking</b> 9:6 <b>aspects</b> 32:11 <b>Assessment</b> 2:3, 9, 13</p>	<p>5:16, 22 <b>assessments</b> 38:12 <b>assist</b> 18:1 <b>Assistance</b> 4:8 <b>Assistant</b> 3:13 31:20 <b>assisted</b> 6:5 <b>assisting</b> 17:10 38:11 <b>Associate</b> 2:18 <b>associated</b> 11:6 34:19 48:14, 15 <b>ASSOCIATES</b> 2:15 5:7 6:6 9:20 <b>Association</b> 3:6 15:9, 12 34:15, 16 <b>assure</b> 24:2 <b>asthma</b> 20:12 <b>as-usual</b> 33:2 <b>Atlanta</b> 13:2 <b>attack</b> 11:15 <b>attempt</b> 9:11 <b>attendees</b> 10:2 25:19 45:12 <b>Attorney</b> 3:7 18:10 <b>Attorney-Adviser</b> 2:6 <b>Austin</b> 54:20 <b>authority</b> 29:16 30:12 <b>authorized</b> 9:4 <b>automatically</b> 10:2 <b>available</b> 8:11, 14 48:5, 12 <b>Aviation</b> 2:8, 12 3:9 5:22 6:2, 20 7:4 12:19, 20 13:8 15:21 16:3, 15, 21 17:5 19:7 20:1, 16 21:17 22:13, 18, 19, 22 23:1, 2, 5, 20 24:5 25:7 32:2 36:7 37:2 38:7, 15 39:10, 18, 20, 21 40:4, 19 41:1, 22 47:16, 21 48:4, 18 49:14, 19 50:6 56:3 <b>aviation-generated</b> 34:17 <b>aviation-sourced</b> 26:7 <b>avoid</b> 44:11 <b>aware</b> 12:18 27:16 28:8 53:1</p> <p>&lt; 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