MEETING AGENDA

Hillsboro Airport Roundtable Exchange
Wednesday, June 29, 7 – 8:45 p.m.
Hillsboro Civic Center, Rooms 113 B&C

7:00	Fred Hostetler	**Welcome** • Announcements • Approval of Previous Meeting Minutes
7:05	Doug Zenn *Facilitator*	**Agenda Overview** **HARE Retreat Update**
7:15	Dr. Christina Baumann, Matthew Davis *Wash. County Public Health*	**Wash. County Air Quality Report** • Washington County's analysis of lead emissions at HIO
7:45		**Public Comment**
8:00	Henry Oberhelman	**Leaded-Fuel Subcommittee** • Letter/resolution regarding 100LL gas
8:20	Chris White *Port of Portland Community Affairs*	**HIO Master Plan Project Advisory Committee** • PAC Membership and Selection Criteria
8:40		**Public Comment**
8:45		**Adjourn**

Hillsboro Airport Roundtable Exchange Draft Meeting Minutes
February 3, 2016: Hillsboro Civic Center, 5:30 p.m. – 7:30 p.m.

Meeting Summary

MEMBERS PRESENT

Bob Braze	Citizen
Bob Flansburg	Alternate for House District 30 (Jurisdictional)
Brian Lockhart	Global Aviation (Airport Business)
Bert Zimmerly	Hillsboro Airport Historian
Debbie Raber	City of Hillsboro (Alternate for Mayor Willey)
Fred Hostetler	Citizen (Land owner adjacent to HIO)
Henry Oberhelman	CPO 8 (Citizen)
Kimberly Culbertson	CPO 9 (Citizen)
Larry Altree	Portland Community College (Airport Related Business)
Melissa De Lyser	Alternate for Washington County Commission (Jurisdictional)
Mike Warrens	Oregon International Airshow
Rhonda Legge	FAA (Technical)
Steve Nagy	Port of Portland

MEMBERS ABSENT

Annette Campista	Latino Business Community
Bill Braack	Oregon International Airshow Alternate
Senator Chuck Riley	State Senate District 15
Deanna Palm	Hillsboro Chamber of Commerce (Business)
Mayor Jerry Willey	City of Hillsboro (Jurisdictional)
Mike Gallagher	Citizen
Stephen Roberts	Alternate for Washington County Commission (Jurisdictional)
Representative Susan McClain	State House District 29

CURRENT MEMBERSHIP VACANCIES

Hillsboro Airport Business Association
Westside Economic Alliance
Citizen

SUMMARY

Introductions and Welcome

Brian called the meeting to order at 5:34. He welcomed the audience and the committee, then asked the committee members to introduce themselves.

Public Comment

Wayne Vanderzanden said there were a lot of advertisements at these meetings and he wanted to advertise that tulips were available for sale on Jackson Road. He also noted that at the last meeting on the Resiliency plan, the presenter omitted the most important thing: agriculture. You cannot exist without agriculture. Wayne added that a year ago, the Port purchased 40 acres of land on the north end of the airport. He looked at it the other day and it has a big lake on it, which he didn't think was allowed. It also hasn't been mowed. He believes there is a city ordinance and it needs mowing.

Jim Lubischer has several concerns with the airport: noise, safety from low flying airplanes and the lead issue. One of the items on the HIO Master Plan is to increase operations, but there are no plans to tackle reducing noise or lead. Jim added that he said at a previous meeting that flight operations were at 90 percent, but that Steve had accurately corrected him. He told the committee that if there is going to be a Master Plan, the public needs details of the operations at HIO; this is the basics of solving problems. He would want to know if 90 percent of flights were private or commercial. Jim then submitted the following public comment:

1. Could HARE be given the details of the operations at HIO? (i.e. corporate operations; emergency operations – lifeflight, police; flight training operations; cargo operations; military operations; individual private pilots; other …) + breakdown of rotary *vs.* fixed wing

   Response: *Air Traffic Control Tower counts provide local versus itinerant and helicopter versus fixed wing aircraft operations. They do not provide data on the type of flight (flight training vs. recreational or charter vs. private corporate flights) .*

2. Can the Port provide guidance on the use of Class I range finders to determine altitudes of aircraft doing training touch and goes? (Note that the Class I range finders do not emit visible light.) The FSDO refused to provide such guidance.

   Response**:** *The Port cannot provide information on any type of range finding device. Interference with pilots or aircraft navigation is a federal offense. Please check with the FAA regarding safely determining aircraft altitudes.*

Miki Barns wanted to follow up on what Jim was saying. She believed that a few meetings back, she asked for data on operations; there should be data on corporate operations. This would allow people to determine what is flight training and recreational. She added that after the last meeting, she had asked Brooke for the presentation from Jon Hay, but had not received a response. She asked how to get this. Steve Nagy replied Jon had brought a flash drive and there wasn't a physical copy in the committee's

possession. Miki asked if Steve could get a copy and Steve agreed. Kimberly Culbertson asked that the presentation be uploaded to the website. Steve said we can do that. He also said that we put statistics in the packets and on the site, and that we would work with Miki in the future.

[A request will be made to Hillsboro Aviation to obtain their presentation materials.]

Jeff Lewis was forced to retire due to whistleblowing. He has been running a website called Aviation Impact Reform which assists people to get the info they need to participate in civic forums like HARE, so the public can make substantial and equitable decisions in how we manage our airports. He thinks it is great HARE is meeting, but hopes the committee understands they need to be serving – not just the aviation industry – but the people. You are here to facilitate the balance between health and quality of life. At this particular airport, the residents have the highest levels of lead due to the failure of the FAA. This is the largest emitter of lead. It makes no sense to allow one business to allow foreign students to fly around and round and move away. Jeff looked at the Hillsboro Airport website: the customs and fees page implies that there is no such thing as a subsidy. He suggested that HARE may want to create a new committee to address subsidies and then accommodate the growth. What this website will show: revenues happening off the airport, customs and cargo/passenger aircraft; it doesn't declare what the fees are. Jeff suggested as a follow-up that the quarterly reports be augmented to reflect how many aircrafts are coming in, paying a customs fee on a monthly and quarterly basis. If not, please amend the website. Talking about green is deceptive.

Steve Nagy replied that our airports are self-sufficient at the Port of Portland. They do not operate off of taxes; rather from fees – businesses who operate, as well as taxes paid by fuel sold. The Port also owns land which is a source of revenue as well. The Port operates from fees that occur on airport. When you talk about upgrades/improvements, most airports use grants – and the FAA participates – to the tune of 90 percent, and the local jurisdiction pays for the remaining 10 percent. We can provide additional information.

Subcommittee Reports – Lead Subcommittee

Henry Oberhelman began by stating that several meetings ago, the lead committee decided to focus on: the status of MOGAS as a replacement fuel, update of the FAA recommendation, and looking at emerging contaminants. During that time, there has been significant news, finding a link between lead and ADHD. Steve responded to the status of MOGAS as a replacement fuel. Several years ago, FAA looked at drop-in fuel. To that end, they identified a multi-year program, and completed bench testing in December of last year. Now, the FAA are selecting two fuels that have the lowest possibility of needing modification, considered straight drop-in. The FAA is moving into phase II, which should be completed by December 2018. The good news is that the program is staying on track and meeting the timeline goals. Steve noted he has not seen any delays in the program or testing.

Regarding the fuel replacement project, Steve added that there is a certain type of aircraft that can accommodate a drop-in fuel. We did a study with that and consultants reported that between 8 and 29 percent of aircraft at HIO could potentially use it; drop-in fuel has to be compatible with the individual aircraft. We sent a survey to those folks with compatible aircraft, because they would have to choose to

use it, given that the fuel was created for autos. Turned out to be a price-point issue. We came back and shared with HARE and our fixed-based operators. One individual is interested in becoming an FBO and we have shared this information with them; they have expressed interested in providing this product. Nobody in the interim has stepped in to provide this service. The Port is not a fuel provider, and nobody has taken us up on the offer. Steve explained that we have offered a subsidy to the fuel providers. Global Aviation doesn't offer this type of fuel, but we have offered to facilitate the distribution of this fuel. There has been some interest, but no FBO's have stepped forward. We cannot force them to do it; we have done everything we can to demonstrate a market need. To reiterate: we are now offering a subsidy. We don't pump or sell, but we are doing everything we can to facilitate the sale of this type of fuel – which as much as 30 percent of HIO aircraft could use.

On the third point, we had talked about pollutants and criteria, and how to roll that into the next master plan. We will talk about that at our next HARE meeting to discuss air quality, noise and metrics, incorporating these elements into the scope of the study.

Henry asked if the committee had any questions and Mike Warren commented that Steve might mention that the fuel works only for piston aircraft and not jets. Steve explained that 10 times the amount of jet fuel is sold compared to Avgas. Henry asked if the FAA replacement program had a mandatory end date. Steve replied that he had not seen an end date, only an introduction for a substitution; not a transition time. David Breen added that the full deployment schedule is eight years. Steve said that supplemental fuel might be used for a long time. Only two airports in Oregon carry MOGAS. Mike asked if new aircraft are compatible with MOGAS. Steve explained that lower-compression engines are more compatible. It seems that more of the newer aircraft are meeting fuel standards, as opposed to previously leaded-only fuels. There are new technological, piston engine aircraft that run off of jet fuel, which will not have this compatibility issue.

Henry closed by saying that the lead committee will continue to meet for encouraging replacement fuel and education for the committee.

Previous Meeting Minutes
Brian took a moment to note they had bypassed approval of the meeting minutes and that now would be a good time. Bob Flansberg moved to approve the minutes, Fred Hostetler seconded the motion.

Subcommittee Reports – Noise Subcommittee
Fred stated that the conclusion of many years of looking at noise is that there is not much we can do. We can ask for assistance from the flight school. He is sure that the 20 or so people who attend HARE meetings are only a portion of people who have concerns in the neighborhood around the airport. We have asked the pilots who are local – and are trying to figure out how to reach out to transient pilots – and have asked them to, during takeoff, follow the runway heading until they reach 1,000 feet before they make a turn. One of our concerns is that when they go north, they will legally turn over the city of Hillsboro or other communities and turn left. The good thing about instrument departures is that they are spaced.

Fred said that the other thing was to ask pilots to reduce their RPMs; most of the noise occurs from prop-engines (and helicopters), and once the aircraft are established and stable, they can cut the RPMs. That being said, during the last noise committee, we had several items and discussed other items than noise. We discussed education; we need it and the public needs it. People who don't understand airplanes just think airplanes can make a U-turn and not fly over houses. We decided at the last meeting in November to look at outreach to get our message out to the general public to explain what we cannot change about airplanes. When they are flying, they need pathways to get down to the runway.

Fred noted that in his report, he would like to see a PowerPoint presentation that could be taken to the farmers market or various gatherings, and the committee could set up a booth to talk to the public. We could also explain the difference between IFR and VFR rules. Instead of having meetings at the airport, we should have meetings at places where people congregate. He asked if there were any comments from the committee on how to do this outreach, in addition to farmers markets. Debbie Raber commented that planners are often used to using acronyms and would love explanations for certain terminology, including VFR and IFR. Fred explained VFR is Visual Flight Rules and IFR is Instrument Flight Rules. He noted it was this very question that illustrates the need to educate the public.

Henry noted that there has been a passionate cry about noise in the community and he would echo that cry. He gets flights over his house every minute-and-a-half. That said, if you want to do outreach, that is a great thing. He thinks Steve's effort to help is a great idea. On the other hand, he doesn't know how much money we should spend, but the noise committee needs to go back to the basics so we are in a stronger position. Henry says we need to add and expand the open house, where conversations can be heightened. We could have a park that is dedicated to aviation, much like Vancouver BC. Fred admitted that the noise committee has moved into a side direction, whether that is proper or not, and this is the place to discuss. We may need to get to the basics, but he needs guidance about how to spend his time. Henry replied that it might be good to return to the original list of goals when the committee first gathered and come back to HARE; it is difficult to direct Fred on what to work on. Fred replied that he would go back and outline what was presented, but he has hit so many brick walls, he welcomes suggestions on how to make progress. Debbie commented that we should table this discussion until after Jason Gately's presentation, and that there might be things that come out of the Master Plan process where the public might say "we really want you to focus on *X.*" Fred responded that she had made a good point and that we will wait and see; this committee needs to become involved in issues that affect the community and ourselves.

Brian added that the noise committee needs to distil what it has done over the last 12 months and bring back requests to the Port, to which Fred replied that requests should come from this committee.

Bob Braze, HIO Traffic Observations

Bob said it was interesting listening to these comments. He has looked at these issues over the last year and asked himself what are the operations and roles of flight control. He found out that he wanted to conduct observation, with the help of the Port and their noise department. Pilots need to know how to get information. In looking at traffic, the short runway has approved. One of the things Fred mentioned coming to the main committee was that the Port take action. In working with the Port, we will get the

information we need. Observing flight operations around the airport, except the underdeveloped south. We will look at complaints coming in. He cannot get into the detail right now. He is going to work with the flight school to see how they train their pilots and see how they get the pilots to comply with a recommended procedure. They have to be more proactive. Instructors will tell their students how to comply, and we will try to get the pilots to comply with the recommended procedures. Unfortunately, it is going to be difficult to come back to members of the public and say you live close to the pattern, because the operations are in line with regulations and we can only offer condolences. We will work toward mitigation. Bob noted that due to this intense winter, there has not been a lot of traffic. People comment that this is an inappropriate time to do observation, and he agrees. We should have abatement procedures in effect and offer recommendations to the operators. The Port leads the country in ANOMS, which stands for Airport Noise and Operations Management System. Bob will provide a report based on observations at the next HARE meeting and plan for mitigation this summer. We are slowly getting rid of noisy airplanes, but new engines will burn MOGAS. Remember that the new fuel may have an issue. To get rid of lead, there will be new chemicals introduced. He doesn't want to live under chemicals that are worse than lead.

Jason Gately, 2005 Hillsboro Airport Master Plan Implementation

Jason Gately opened by stating this is the third installment of a series looking at what a Master Plan is. Sean Loughran remarked that the presentation is for understanding and that his team is keeping notes about what his team is hearing. Earlier in the night, the issue of sustainability came up. Last time, the discussion was about seismic resiliency. We are serious about making this part of the process. Sean echoed Henry's comments about going back to the basics, and he assured the committee that the Port would be doing that to address these issues. He added that we will continue to build our understanding about what the committee and community members think the key issues are.

- Review of:
    - Forecast tracking
    - Major projects
    - Compatibility Study implementation
- Forecast Tracking – Total Annual Operations
    - A component of any master plan is an aviation demand forecast
- Map of capital projects
    - US Customs and Border Protection
    - High Speed Exits
    - Taxiway C Extension
    - Fire Station
    - Pump Station
    - New Aero Air Hangar
    - Runway 2-20 and Taxiway C Rehabilitation
    - Terminal Apron Reconstruction
    - Global Aviation Hangar
    - Ochoco Hangar

    - Runway 13L-31R
    - West Apron Rehabilitation
    - HAI Hangar and Ramp
- 2015 Property Acquisition – purchased from Solar World
- Compatibility Study – 32 Operational Elements
    - Land Use
        - Ensure compatible land uses around the airport through:
            - Adopting airport related zoning
                - Base zoning
                - Overlay zoning
            - Coordinating with city/county on land use reviews
            - Maintaining height restrictions within existing development regulations
- Community Involvement
    - Annual Open House
    - Hillsboro Airport Issues Roundtable
    - Jackson Bottom Wetlands Mitigation with ODOT and Clean Water Services
    - Washington County Fairgrounds Advisory Committee
    - City Comprehensive Planning Technical Advisory Committee.

Fred asked what multilateration (MLAT) flight tracking system meant. Steve explained that it is an additional system that acts as radar which only works with transponders. This gives us some picture of the local area, if an aircraft has its beacon on. Phil Stenstrom added that it is a supplementary data source. Henry asked if training aircraft provides input to this system, to which Steve affirmed. Steve added that this presentation was a snapshot of where we were. We are focusing on where we are and where we are going. Next time, we will talk about – given what a Master Plan is – what we did last time and ask the question: what do we want to include in the next Master Plan? We want to listen to what HARE and the community has to say, and try as best as possible to include those comments and ideas.

Larry Altree, PCC Aviation Program

- Two Aviation Programs
    - Aviation Maintenance Technology
        - Since 1969
        - Based at the Rock Creek Campus
        - AAS Degree
            - *Students earn their Airframe and Powerplant Mechanic Certificates*
    - Aviation Science
        - Since 1999
        - Rock Creek Campus/HIO
        - SE Center/TTD
        - AAS Degree
            - *Students earn their Commercial Pilot and Flight Instructor Certificates*

- Aviation Maintenance Technology
    - 30,000 foot, two-hangar complex. Seven classrooms, six shops, tool room and computer resource center
- AMT "Fleet" (non-flying condition)
    - Airplanes
        - *Turbo-AeroCommander 680T (Twin turbo-prop); Beechcraft QueenAir Model 65 (Former Dept. of the Interior); Cessna 150M (Single engine trainer); Cessna 150 (Structure only); Cessna 305A, (Also called L-19 "Bird-dog" by military, former U.S. Army); Cessna 310Q (Twin reciprocating engines); Cessna P337 Skymaster (Pressurized cabin/twin); Piper Tomahawk PA-38 (Single engine trainer); Piper Cherokee PA-28 (Structure only); Piper Cheyenne PA-31T (Structure only)*
    - Helicopters
        - *Huey, Bell UH-1H (Turbine powered, former Army National Guard); McDonnell Douglas/Hughes 369A (Turbine powered, OH-6A military designation); Bell 47 (Model 47-G2), (OH-13H military designation, former U.S. Army); UH-12C Hiller (Also called OH-23C, former U.S. Army); UH-12C Hiller (Also called OH-23C, former U.S. Army)*
- AMT Degree
    - FAA Mechanic Coursework
        - General, Airframe and Powerplant
        - 1900 hours of required training
            - Part 147
        - Extensive FAA written and practical testing
    - Comprehensive Degree Requirements
        - 16 credit hours general education
        - Math and writing competencies
    - 23 months total
        - 7 a.m. – noon, Monday – Friday
- Aviation Science
    - Professional Pilot Program
- PCC – HAA Partnership
    - PCC
        - Provides AAS degree opportunity
        - Instruction for all academic courses
    - HAA
        - Provides quality flight instruction for PCC flight courses
        - Students pay flight training fees through PCC:
            - Airplane: approx. $79,000, including exam fees
            - Helicopter: approx. $103,000, including exam fees
- Aviation Science – Airplane
    - At PCC
        - General Education
        - Math and Writing Competencies

        - Aviation Academic Courses:
            - *Intro to Aviation*
            - *Applied Aerodynamics*
            - *Systems Airframe*
            - *Systems Powerplant*
            - *Pilot Human Factors*
            - *Meteorology*
            - *Aviation Weather Services*
            - *Aviation Careers*
            - *Aviation Laws and Regs*
            - *Economics of Flight Ops*
            - *Pilot Performance (CRM)*
    - Flight Courses at Hillsboro Aero Academy:
            - *Private Pilot Flight*
            - *Instrument Flight*
            - *Intro to Commercial*
            - *Commercial Flight*
            - *Multi-engine Instructor*
            - *Single-engine Instructor*
            - *Instrument Instructor*
- Aviation Science – Helicopter
    - At PCC
        - General Education
        - Math and Writing Competencies
        - Aviation Academic Courses:
            - *Intro to Aviation*
            - *Applied Aerodynamics*
            - *Systems Airframe*
            - *Systems Powerplant*
            - *Pilot Human Factors*
            - *Meteorology*
            - *Physics*
            - *Aviation Weather Services*
            - *Aviation Careers*
            - *Aviation Laws and Regs*
            - *Economics of Flight Ops*
    - Flight Courses at Hillsboro Aero Academy
            - *Private Pilot Flight*
            - *Basic Commercial-Instrument*
            - *Advanced Commercial*
            - *Flight Instructor/Instrument Instructor*
- Employment Outlook
    - “Demand unprecedented for pilots and technicians”

- *"To meet this tremendous growth, the 2015 Boeing Pilot and Technical Outlook forecasts that between now and 2034, the aviation industry will need to supply more than one million new aviation personnel – 588,000 commercial airline pilots and 609,000 maintenance technicians."* – 2015-2034 Boeing Market Outlook

Melissa De Lyser asked Larry how many students are in a graduating class, to which he responded about 58 students and half graduate. Melissa inquired about the cost, to which Larry responded about $103k for helicopter training; $80k for aircraft training. Henry asked if the program got into the integrated noise model or replacement. Larry said his program does, and he invites the Port's noise department to come into classrooms and share. Henry clarified he was talking about the technology, and Larry responded that indeed, they talk about it. Steve pointed out that, at HARE meetings, one will often see Larry's students sitting in the audience, engaging with the community. Larry agreed that that aspect was part of the program.

Bob Braze asked about the percentage of students that fill a need in the local community. Larry said that flight instruction is usually their first job, and although they haven't run the statistics, the majority of his students have their first job at either Hillsboro or Troutdale. They feel very connected to the community; even people coming in from other countries. Larry affirmed that it is common that the place you learn to fly is always home. For his students, this is home for them. Bob asked if Larry had many foreign students, to which he responded he did not have many international students, but he is always happy to have them. He tells his local students to reach out to the international students.

Bert Zimmerly stated that to become a commercial captain, a pilot needs to reach 1500 hours. Larry responded that his students typically come out of the program with 225 or 250 hours, pilot demand being what it is. Bert acknowledged that getting to 1500 hours would be tough on family life. Larry agreed that students have to love it, because it isn't a quick path to pay off; there will be lean years to begin with. Bob inquired about the average age group. Larry said that the average age has morphed a bit, and that he is getting a lot of veterans now rather than students fresh out of high school.

Public Comment

Bill McCandless lives 4.2 miles away. He has one observation on noise abatement: the information is hard to obtain. The phone number listed online goes to Whispertrack. The information we need to get to pilots needs to be fixed. In regards to the survey about MOGAS, Bill asked if there is more information available about HAA potentially using MOGAS. Steve replied that the committee could talk to him more, but HAA is one of the operators we are engaged with.

Chris Berg is a private citizen, pilot and student of Larry's. There is information maintained by the FAA that provides information about noise abatement for Hillsboro Airport. The Port maintains Whispertrack which could be updated, but offers valuable information. Airnav.com has been updated to refer to the Whispertrack website as well. The definition of ADS-B is "Automatic Dependence Surveillance – Broadcast." Transponders are not required for aircraft to operate, but most aircraft have transponders.

Miki Barnes asked for extra time to respond to distortions in the HARE packet. She said that Mr. Altree added subjective comments that indicated she was trying to foster fear. She stated that if the members

of this committee cannot keep their subjective thoughts out of the minutes, then they should not be part of the committee. She doesn't care for flight training over her house, and she wants to be clear about that. She would appreciate it if her words were not misrepresented. She also stated she heard both Henry and Fred state twice, that when it comes to noise, there's not a heck of a lot to be done. She believes these students have more rights than her, and just as she is being plagued by it, so are the community members. She again asked that her words not be distorted. Miki said that she has sent information requests to get specific data of what countries the pilots are from and was told that such information is proprietary. She would like to know how many students are local and are from other countries. Miki also said that the Tribune article from 2013 about PCC played a key role in this discussion, since much of the article was about PCC encouraging Chinese students to come here to learn to fly.

Miki also expressed a concern about the idea of community outreach at the farmer's market, stating that if the Port is able to market their programs, Oregon Aviation Watch should also be able to have a seat at the table. They have been told by the farmers market that such a thing cannot be approved, but if they allow the Port, they should allow Oregon Aviation Watch. It's a democracy.

> Note: Miki submitted a formal correction to the November 2015 HARE minutes
> [see attached document]

Jim Lubischer asked where his questions stood, if there was any comment on the questions he asked earlier and if those questions were up in the air. He stated that when performing a Master Plan, forecasts can be wrong and we must be careful. The mention of MLAT was made. The Port gave him readings of MLAT and they were in violation because they were too low, but FSDO wouldn't use them because they are not 100 percent accurate. Debbie asked for clarification regarding FSDO (Flight Standards District Offices). He also noted he had concern about the touch-and-goes flying over his house and that there are laws against using laser pointers.

Fred asked for input on what an agenda item for noise should look like at the next meeting, and requested people send their thoughts to Brian.

The meeting was adjourned at 7:53 p.m.

Date: 2/4/16

To: Steve Nagy

Topic: Correction to Comments Attached to 11/4/15 HARE Meeting Minutes

The 11/4/15 HARE meeting minutes, under the "Public Comment Response" section, include remarks by HARE member Larry Altree that misrepresent comments I made during the meeting and contain subjective value judgments inserted by Mr. Altree. For example, he accused me of attempting "to foster fear and/or resentment of students who are from other countries and here to receive flight training at PCC." This patently false statement will be discussed in greater detail below. In any case, I am opposed to investing taxpayer funded educational dollars into programs that degrade the environment and erode livability. I am also opposed to policies that force the public to subsidize private flight training business interests. In addition, I believe that area residents have a right to know how their tax dollars are allocated – who pays, who benefits.

Please note the "Public Response Comment" section is not a part of the meeting minutes. It was written after the fact in response to questions raised by community members. My concerns were related in large part to a presentation provided by Hillsboro Aero Academy CEO, Jon Hay. During his talk, Hay stated that of the 200 to 250 students who received flight training from the academy annually, 60 to 70 percent are from overseas. He further stated that only 9 or 10 of the students are from the local community. Unfortunately Mr. Hay declined to take questions from the audience thus no opportunity to seek further clarification was provided. Mr. Hay did note that his company contracts with PCC to provide the flight training portion of the pilot training program. He did not, however, speak about how many of the Hillsboro Aero Academy students were from the PCC Aviation Sciences program.

I fully recognize that Mr. Altree, the Department Chair of the PCC Rock Creek Aviation Sciences program, has a vested financial and professional interest in promoting his program. I also recognize he may be threatened by people like me who due to noise, pollution, safety, economic and security concerns are opposed to flight training in Washington County. Nonetheless as a member of HARE , a committee that is described on the Port of Portland (Port) website as "the community's public forum for discussion of news, information, and concerns related to Hillsboro Airport," Mr. Altree and the Port, who published Mr. Altree's remarks, is responsible for accurately representing public concerns.

Unfortunately in this instance, Mr. Altree twisted and distorted my comments by insinuating meanings I did not express. In point of fact I am opposed to all flight training in Washington County by all prospective pilots both local and foreign as well as out of state students. On the numerous occasions I've contacted various agencies including the Port of Portland, the FAA, PCC, Washington County, DEQ, the Department of Aviation, the Governor's office, as well as local, state and federal legislators about flight training related noise and pollution, I am frequently told there is nothing that can be done. Typically, I am further informed that these pilots essentially have the right to fly wherever, whenever they please despite the negative impact on the health and well-being of the community. In this respect student pilots both from within the U.S. and from overseas, have more rights than established tax paying residents.

According to a 6/4/13 Portland Tribune article "Troutdale Airport Is International Cockpit for Pilots" http://portlandtribune.com/go/44-features/153866-troutdale-flight-school-is-international-cockpit-for-pilots:

> "Hillsboro Aviation's [now Hillsboro Aero Academy] Troutdale facility was opened on behalf of a request by Portland Community College to help grow their aviation flight program, Hay said.
>
> Each flight school offers two- and four- year college degree programs through Portland Community College and Embry-Riddle Aeronautical University, respectively."

The foregoing quote suggests that PCC played a significant role in accommodating the international student population training at the Troutdale Airport. Nonetheless the article does not include definitive information on the number of students seeking pilot certification through PCC compared to those who contract directly with the Hillsboro Aero Academy. In the interest of accuracy and full public disclosure, I would gladly welcome comprehensive information on this topic.

PCC has not, to my knowledge, provided easily accessible detailed information regarding the number of student pilots in their program in terms of percentages of students from the local community, from within the U.S. and those recruited from overseas as well as students relying on the GI bill. I have performed some internet searches in an effort to locate this information, but to date have been unsuccessful. I freely admit that I lack comprehensive data. To remedy this situation and in the interest of accuracy, I would welcome and appreciate any efforts by PCC and the HARE committee to provide this information. In this regard it would be instructive to review all data accrued since the inception of the PCC flight training program with a breakdown by year.

As noted in the letter dated 12/14/16 sent by Oregon Aviation Watch to PCC President, Sylvia Kelly, I and the members of the Oregon Aviation Watch board agree that:

> "Though we are strong supporters of educational programs and international exchange endeavors that enhance and promote the greater good, we do not feel that flight training falls within this category. We are disappointed that PCC never bothered to reach out to the public who contribute to PCC via property tax disbursements, ballot measures, and State of Oregon financial support to ask how they felt about instituting a helicopter and fixed wing flight training program that has had and continues to have such a disruptive and toxic effect throughout the region. Indeed many of the negative health effects caused by flight training impair and interfere with the learning process and the quality of life of area residents."

The full text of the letter is attached and was submitted to the HARE record at the 2/3/16 meeting.

To be very clear, my issue with flight training relates to the negative effects generated by the program regardless of whether the students hearken from overseas , out of state or the local community. Please enter these comments into the HARE record.

Thank you for your time and consideration.

Sincerely,

Miki Barnes

Oregon Aviation Watch
PO Box 838
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December 14, 2015

Ms. Sylvia Kelley
President of Portland Community College
12000 SW 49th St.
Portland, Oregon 97280

Re: Unanimous agreement by the Board of Oregon Aviation Watch that the Aviation Sciences pilot training program at PCC should be terminated for the reasons set forth below.

Dear Ms. Kelley:

During a phone conversation this summer, you recommended sending a letter documenting the concerns of Oregon Aviation Watch related to the PCC Aviation Sciences flight training program.

Members of the Oregon Aviation Watch board are unanimously opposed to flight training in Washington County due to noise, toxic emissions, safety risks, security concerns, property devaluation, taxpayer expense and the livability degradation associated with this activity. Though Oregon Aviation Watch is concerned about all of the above issues, this letter will focus predominantly on the degradation of livability due to noise, lead and other toxic emissions generated by PCC's symbiotic relationship with the Port of Portland, the FAA and the aviation industry. The erosion of public trust, conflict of interest issues and questions about responsible stewardship regarding public monies will also be explored.

Though we are strong supporters of educational programs and international exchange endeavors that enhance and promote the greater good, we do not feel that flight training falls within this category. We are disappointed that PCC never bothered to reach out to the public who contribute to PCC via property tax disbursements, ballot measures, and State of Oregon financial support to ask how they felt about instituting a helicopter and fixed wing flight training program that has had and continues to have such a disruptive and toxic effect throughout the region. Indeed many of the negative health effects caused by flight training impair and interfere with the learning process and the quality of life of area residents.

In 2015, the Port of Portland opened a third runway at the Hillsboro Airport. It was constructed to accommodate flight training activity and other smaller aircraft. More than a decade has passed since the Port of Portland revealed during the 2005 Hillsboro Airport master planning process, that, "Future growth in local operations will be driven by training operations at Hillsboro Airport. This will be a function of the businesses on the airport which provide pilot training services."[1] A 2006 Daily Journal of Commerce interview with Mary Maxwell, who served as served as Director of Aviation for the Port of Portland from 2004-2009, voiced similar views "Next on our plans will be the development of a third runway, which is primarily a shorter runway for training aircraft."[2]

The bulk of the $17M earmarked for this boondoggle came from public coffers, including the FAA, Connect Oregon, Oregon Department of Transportation and the Port of Portland. As a result the public is left footing the bill, not only for a portion of PCC classroom training for prospective pilots, but also for airport infrastructure required for this activity. In addition the Hillsboro Airport tower and requisite staffing are publicly funded. Clearly, PCC's flight training program comes at great expense to area residents, who are not only underwriting a significant monetary burden, but are also routinely deprived of their right to the enjoyment of their property.

More than 84 years ago, the Hillsboro Airport (HIO) started out as a grassy airstrip. Since that time it has grown into the busiest general aviation airport in the state. Yet despite this exponential growth over the years, an Environmental Impact Study has never been done. Instead the Port and FAA frequently rely on unsubstantiated assertions and poorly documented studies to promote and rationalize the multiple expansion projects that have occurred at this facility.

A careful review of Port and FAA documents reveals that the vast majority of the operations at HIO are on behalf of flight training students, many of whom attend PCC. As a direct result of the relationship honed between the Port of Portland, the FAA and PCC, this airport now hosts one of the largest combined helicopter and fixed wing flight training schools in the Pacific Northwest. Hillsboro Aero Academy (formerly Hillsboro Aviation) is a private for-profit company primarily owned by two out of state, east coast investors – Renovus Capital and Graycliff Partners. Minority owners include Max Lyons, who sold the school to Renovus and Graycliff in 2014 and who now manages the school. As noted on the PCC Aviation Science website, the flight instruction portion of the training "is provided by our industry partner, Hillsboro Aero Academy, at the Hillsboro Airport and Troutdale Airport locations."[3]

Jon Hay, the current President and CEO of Hillsboro Aero Academy, is also a minority owner. During a November 2015 Hillsboro Airport Roundtable Exchange (HARE) meeting, Mr. Hay said that 60 to 70 % of the student pilots who train with Hillsboro Aero Academy are from overseas. What this reveals is that we now have a private flight training school, owned primarily by two out of state investment firms, training mostly foreign students by utilizing infrastructure subsidized by US citizens, and utilizing airspace over Washington County residents.

Aviation Noise - Health Impacts

The World Health Organization [WHO] Guidelines for Community Noise documents seven categories of adverse health effects of noise pollution on humans: hearing impairment, interference with spoken communication, sleep disturbances, cardiovascular disturbances, disturbances in mental health, impaired task performance, negative social behavior and annoyance reactions.[4] All of these negative health impacts can potentially interfere with learning and education.

According to WHO, "Severe noise problems may arise at airports hosting many helicopters or smaller aircraft used for private business, flying training and leisure purposes."[5] The WHO also reports that, "Although everyone may be adversely affected by noise pollution, groups that are particularly vulnerable include infants, children, those with mental or physical illnesses, and the elderly. Because children are particularly vulnerable to noise induced abnormalities, they need special protection."[6] Please note that all of the above vulnerable populations are routinely, willfully, and intentionally subjected to oft-times relentless aviation noise intrusions by PCC Aviation Science students.

To place the extensive impact of flight training aircraft noise in perspective, it is important to consider that approximately two-thirds of the 220,000 operations logged at HIO in 2011 involved "touch and go" maneuvers wherein student pilots repetitively circle within 4 to 5 miles of the airport at an altitude of less than 2,000 feet.[7] Additional training occurs at designated locations within 20 miles of the airport.

According to a U.S. Airport/Facility Directory, there is an "Intensive Flight Training" area adjacent to HIO that extends over Buxton, Banks, and Manning then west towards Timber. It continues south over Gales Creek, Forest Grove, Carlton and Lafayette. From McMinnville it proceeds east almost to St. Paul then north back to HIO.

The broad ranging nature of the flight training industry essentially means that people living in urban settings in close proximity to HIO as well as those living 20 miles away in an otherwise peaceful wooded or rural area with low ambient noise levels are frequently subjected to the drone of aircraft noise overhead.

Sadly, the Port of Portland has historically exhibited a dismissive stance towards community noise concerns. Just as PCC denies regulatory authority to address aircraft noise, so too does the Port. Though the Port has a noise office, the only action it takes on behalf of concerned residents is to log complaints while at the same time denying that it has any authority or impetus to take definitive action aimed at reducing or mitigating the intrusions. Thus the noise problem continues to fester.

As noted in an 8/20/15 Oregon Aviation Watch posting[8], agencies and government entities responsible for addressing aviation noise routinely deflect, ignore and minimize the problem which, in effect, promotes aviation interests over the greater good. Numerous studies attest to the negative impact of noise. Due to the pervasive failure of every government agency to address this serious health and livability issue, Oregon Aviation Watch urges PCC to terminate the Aviation Sciences program.

For additional information on the negative health effects of aircraft noise, please visit the following links:

- *Aircraft Noise Linked with Heart Problems* (Harvard School of Public Health): http://www.hsph.harvard.edu/news/press-releases/aircraft-noise-linked-with-heart-problems/
- *Noise Impacts on Health* (EU Commission, Science for Environmental Policy): http://ec.europa.eu/environment/integration/research/newsalert/pdf/47si.pdf
- *Valuing Quiet* (American Journal of Preventive Medicine): http://www.ncbi.nlm.nih.gov/pubmed/26024562

Lead Emissions

Lead pollution is also a major concern. Out of nearly 20,000 airports nationwide, HIO ranks in the top one percent, 21st in the nation in lead emissions.[9] The 2011 Environmental Protection Agency (EPA) National Emissions Inventory (NEI) identifies HIO as the largest facility source of lead in Oregon. Per a recent Environmental Health Perspectives report, "…today piston-engine aircraft are the chief source of lead emissions in the United States, emitting 57% of the 964 tons of lead put into the air in 2008, according to the most recent figures from the National Emissions Inventory."[10] PCC's student pilots train, for the most part, in piston engine aircraft that use leaded fuel, thus are highly responsible for the lead emitted over vulnerable populations throughout the region.

The Port's initial environmental assessment on the third runway estimated that HIO emitted 0.7 tons of lead into the air in 2007.[11] In their Supplemental Environmental Assessment, the Port and FAA projected that HIO lead emissions are expected to rise to between 0.81 to 0.92 tons per year (tpy) by 2016 and 2021, respectively.[12] Both of the above cited documents reveal that already high levels of lead emissions will continue to increase at HIO from an estimated 0.7 tpy in 2007 to 0.9 tpy by 2021.

PCC students also receive pilot instruction at Troutdale Airport which is also a significant source of lead emissions. The EPA estimated that this facility emitted 0.18 tons of lead in 2011 and further identified the

Troutdale Airport as the 8th largest facility source of lead emissions in Oregon and the number one source of lead emissions in Multnomah County. However since the operational count at Troutdale Airport has more than doubled from 56,790 operations in 2011[13] to 121,651 as of the end of the 2015 fiscal year,[14] it is reasonable to assume that the lead emissions have also doubled given the increase in flight training at this facility.

These findings indicate that lead emissions at the Hillsboro and Troutdale airports combined exceeds more than one ton per year just during the landing and take-off cycles of flight. Additional lead is released into the air during pre flight engine run-up checks and the cruise phase.

According to the EPA, "Children are particularly vulnerable to the effects of lead. Exposures to low levels of lead early in life have been linked to effects on IQ, learning, memory, and behavior. There is no identified safe level of lead in the body."[15] Research also indicates that "…once an elevated blood lead concentration has been detected, it is too late to prevent lead's deleterious effects on the developing brain. This fact, plus the very low blood lead levels established to negatively impact development indicate that the only way to prevent childhood lead poisoning is to prevent lead from ever getting into children's bodies."[16]

Over the past 50 years the Centers for Disease Control (CDC) has periodically lowered acceptable blood lead levels for children and has ultimately concluded that, "...no level of lead in a child's blood can be specified as safe."[17]

The excerpt below from the National Institute of Health discusses the impacts of lead on the human organism.

> Lead is a very strong poison. When a person swallows a lead object or breathes in lead dust, some of the poison can stay in the body and cause serious health problems... it is more common for lead poisoning to build up slowly over time. This occurs from repeated exposure to small amounts of lead. In this case, there may not be any obvious symptoms. Over time, even low levels of lead exposure can harm a child's mental development. The health problems get worse as the level of lead in the blood gets higher. Lead is much more harmful to children than adults because it can affect children's developing nerves and brains. The younger the child, the more harmful lead can be. Unborn children are the most vulnerable.
>
> Adults who have had mildly high lead levels often recover without problems. In children, even mild lead poisoning can have a permanent impact on attention and IQ. People with higher lead levels have a greater risk of long-lasting health problems. They must be followed carefully. Their nerves and muscles can be greatly affected and may no longer function as well as they should. Other body systems may be harmed to various degrees, such as the kidneys and blood vessels. People who survive toxic lead levels may have some permanent brain damage. Children are more vulnerable to serious long-term problems.[18]

An extensive body of literature now links very low blood lead levels (occurring at typical background exposures) with ADHD. The symptoms of ADHD include extreme hyperactivity, impulsivity, inattentiveness and distractibility. ADHD often co-occurs with conduct and oppositional defiant disorders. Blood lead levels less than 1 mcg/dL, well below the 5 mcg/dL reference level established by the CDC in 2012, contribute to the development of ADHD. "Blood lead levels from 1 to 10 μg/dL are associated with lower child intelligence quotient (IQ), weaker executive cognitive abilities, behavior symptoms of ADHD and diagnosis of ADHD in community surveys."[19] A 2010 study published in the Journal of Child Psychology and Psychiatry reported that "…ADHD, both as a diagnosis and as a

symptom dimension, is associated with blood lead levels at low exposure, levels, even below 2.5mcg/dL."[20]

Lead exposure in adults is linked with cardiovascular disease and dementia[21] as well as an increase in violent behavior.[22]

In light of the significant negative health impacts associated with lead on neurological development and the learning process including, but not limited to, lower IQ's, ADHD, conduct disorder, and cognitive impairment, PCC's credibility as a responsible educational institution is in question.

PCC and Hillsboro Airport Contributions to Other Air Toxins

In addition to lead, HIO, is also one of the biggest facility sources of an array of other air toxics in Washington County. Per the 2011 Environmental Protection Agency (EPA) National Emissions Inventory (NEI), HIO is the largest facility source of acrolein, 1,3 butadiene, ethyl benzene, formaldehyde, acetaldehyde, organic carbon particulate matter 2.5, elemental carbon particulate matter 2.5, and carbon monoxide; the second largest source of nitrous oxide, sulfur dioxide and particulate matter 2.5 emissions; and the third largest source of volatile organic compounds in Washington County.[23] Many of these toxins are known carcinogens, others are associated with an increased risk of respiratory and cardiovascular disease as well as other serious and potentially life threatening ailments.

The Coalition for a Livable Future (CLF) identified a number of areas throughout the greater Portland Metropolitan region as 'hotspots' due to "extremely high levels of air toxics, at more than 120 times above the benchmark level."[24] The 'hotspots' in Washington County include Hillsboro, Beaverton and Aloha-Cooper Mountain. In addition, "there are much larger areas, often surrounding these hotspots, with air toxic levels that are 81 to 120 times above the benchmarks. These include parts of Vancouver and Gresham as well as parts of northeast, northwest, and southwest Portland, part of Forest Grove, and a large area of Washington County between Tigard and Hillsboro." Per CLF, almost the entire greater Portland Metropolitan Region "has air toxics at levels that can cause adverse health effects."[25]

Since PCC student pilots are primary users of HIO it follows that they are also major contributors to the serious pollution problems plaguing the region, a situation that could be easily remedied by eliminating the Aviation Sciences program and thereby restoring PCC's reputation as a conscientious and respectable educational institution rather than a major polluter.

Conflict of Interest Concerns

The recent decision by PCC[26] to appoint Carol Lyons, the wife of Max Lyons, to the PCC Foundation Board triggers major concerns about how PCC manages it affairs, as Ms. Lyons stands to financially benefit from her husband's aviation business connections with PCC. Max Lyons is currently the manager and minority owner of the Hillsboro Aero Academy and was owner of the Hillsboro Aviation flight school prior to the sale of the flight school to east coast investment firms. The Lyons family has likely profited at public expense due in no small measure to PCC's history of contracting with the private businesses associated with the Lyons family. Ms. Lyons appointment attests to PCC's questionable boundaries and inattention to adequate conflict of interest policies related to the use of public money and well-intentioned donations to their foundation. According to her PCC Foundation website bio, Carol Lyons is currently a Managing Partner at Lyons Aircraft Leasing and Lyons Properties and formerly served as Environmental Planner for the Port of Portland and an Operations Coordinator for the Portland International Airport.[27]

Another eyebrow raising appointment is that of Susie Lahsene, who currently works as a Senior Manager for Transportation and Land Use Policy at the Port of Portland.[28] Like the Hillsboro Aero Academy and the Lyons family, the Port profits via its relationship with PCC through its lease agreement with Hillsboro Aero Academy and Hillsboro Aviation as well as the fuel flowage fee of over 0.08 cents affixed to every gallon of jet and leaded fuel sold at HIO.

Obviously, Ms. Lyons and Ms. Lahsene and /or the companies they are affiliated with may benefit financially and otherwise from decisions promoted by the PCC Foundation Board. As a result there is the risk that these individuals may continue the long-established policy exhibited by the Port, PCC, Hillsboro Aviation and the Hillsboro Aero Academy of minimizing negative environmental and livability concerns in favor of monetary gain.

Conclusion

The 2015 Washington County property tax statement reveals that between 4 and 5 percent of the total bill is directed to PCC. Additional public monies are allotted to PCC by the State of Oregon. A 2015-2017 PCC General Fund budget report stated that 14 percent of PCC's revenues during this time-frame will come from property taxes and 37 percent from state disbursements[29], thus more than half of PCC's budget is directly linked to taxpayer largess.

In return for the generosity bestowed by the public on PCC, many residents are routinely barraged with aircraft noise, toxic emissions and a number of other negative impacts – an unfortunate situation that represents a serious betrayal of the public trust and raises deep-seated questions about the ability of current PCC leadership to exercise responsible stewardship.

Oregon Aviation Watch urges PCC to be part of the solution rather than a primary cause of the problem. Eliminating the Aviation Sciences program would go a long way towards restoring PCC's reputation as an environmentally responsible educational institution that cares about the health and well-being of the community.

Members of Oregon Aviation Watch will gladly meet with you and other PCC decision makers to discuss our concerns and recommendations in greater detail.

Sincerely,

Miki Barnes, LCSW
President of Oregon Aviation Watch

James T. Lubischer, MD
Vice President of Oregon Aviation Watch

Cc:

Senator Chuck Riley
Representative Joe Gallegos
Sandra Fowler-Hill – President PCC Rock Creek
Jim Ryan – Oregonian
Kathy Fuller – Hillsboro Tribune
Tony Schick – Oregon Public Broadcasting
Representative Susan McLain
Representative Deborah Boone
Richard Read – Oregonian
John Schrag – Hillsboro Tribune
Nigel Jaquiss – Willamette Week

Notes

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HARE Retreat Meeting Minutes

Project:	Hillsboro Airport Roundtable Exchange (HARE)
Subject:	HARE Retreat
Date:	Wednesday, May 04, 2016
Location:	Walters Cultural Arts Center

Attendees:		
	Jayson Shanafelt	Jason Gately
	Henry Oberhelman	Fred Hostetler
	Patrick Preston	Bert Zimmerly
	Steve Nagy	Bob Flansburg
	Nicole Stoenner	Brian Lockhart
	Chris White	Bob Braze
	Sean Loughran	Mike Gallagher
	Phil Stenstrom	Doug Zenn
		Renee Stueber

Welcome/Intros

Doug Zenn welcomed the committee and reviewed the meeting agenda. HARE has existed for 10 years, and the Port of Portland (Port) is preparing for an update to its Master Plan. Zenn expressed the importance of HARE's ongoing involvement since the Port's 2005 Master Plan. This committee was chartered as an advisory group, and subcommittees have evolved to address specific topics.

Zenn then reviewed survey results, which focused on HARE's progress over the past year on a broad scale. The following was discussed amongst the group regarding HARE:

- **Influence:** One of the most frequent influences mentioned was raising awareness among the public about airport issues.
- **Achievements:** The group agreed ongoing issues that they've influenced include runway development roadway, and conversations about noise and air quality.
- **Progress:** Much of the group indicated slow progress.
    - Some subcommittee work has slowed or stalled. The discussion included that the committees can be more influential and need to provide recommendations to the HARE and Port.
    - It was mentioned by the group that most of the original Master Plan goals have been accomplished.
    - It was noted that the survey did not include the public's opinion of HARE or airport issues, which would be interesting.

Steve Nagy outlined committee successes since its inception, noting its involvement in the recent airport runway. It's easy to forget the participation and influence that has occurred over the years.

The group then provided introductions.

Role of HARE in transition to Master Plan

Nagy announced that a Project Advisory Committee (PAC) will be created for the upcoming Master Plan. He asked for HARE recommendations/lessons learned to shape the PAC, recognizing the difficulties (both for the public and the Port) of having two committees. Nagy noted the differences between a traditional standing committee, such as HARE, and a project-specific committee. He also mentioned that HARE has already impacted the Master Plan in various ways, including the decision to hire a noise consultant and plan for airport contingency options in the event of an earthquake.

The group inquired how to address the ongoing and long-range environmental issues (air quality and noise). It was confirmed that air quality and noise subcommittee work can be included in the Master Plan process. There are a number of different ways that day-to-day airport operations can be addressed during the Master Plan process. These include: subcommittee work during the Master Plan process; staff work with individual community members; and ongoing issue reporting as part of each Master Plan meeting. The committee also expressed the need for a significant public involvement component within the Master Plan effort.

The Port indicated some individuals from HARE may be included, along with new faces to accurately represent the community and its interests.

HIO Master Plan Update

Jason Gately provided a Master Plan background presentation (see Master Planning Background and 2018 HIOMP Timeline PowerPoints), followed by Sean Loughran (see attachment A: 2018 MP Goals PowerPoint).

Jason said the Plan is funded through the FAA, specifically the airport division at regional level. The Port is currently in the process of securing funding. The process includes review and acceptance of airport graphic/alternative.

The group discussed the Policy Advisory Committee: The Port indicated they were not starting from scratch on the committee because of the HARE committee progress. The City, County and Port will work together on the selection process of committee positions and will prioritize HARE committee members for membership, when possible. Nagy pointed out that the PAC will likely need more diversity of interests and demographics than the current HARE, to more closely represent the community.

Group members suggested that community involvement, either through the PAC or HARE, should occur prior to scope of work development. The Port mentioned that HARE conversations have informed scope thus far, and this meeting and the public workshop will also influence the scope of work.

Chris White provided a presentation on the proposed public involvement components of the Master Plan. (See attachment A: HARE Retreat Public Involvement May 2016 PowerPoint). She said public involvement would be an important part of the Master Plan effort. The group discussed the upcoming public workshop to discuss the Master Plan. The committee emphasized the importance of addressing the group as a whole, not only in small groups, so that public feels heard and truly involved. Chris said the Port will likely utilize a ‘café processes for the event, and also public comment at the upcoming HARE meeting. Chris mentioned that the Port is focusing on equity as part of their strategic plan, and the Hillsboro Airport Master Plan will also have an equity focus. This necessitates a representation on the PAC that is more diverse.

In discussing the PAC and groups that might have interests in the process, the Group suggested:

- Centro Cultural - Hispanic group
- Local tribal organizations
- Neighborhood or homeowner associations
- Operators
- WACO Citizen Action network.
- Glencoe Swale
- Oregon Electric Vehicle Association
- Schools
- Emergency response representatives

Patrick Preston, the City of Hillsboro representative, pointed out that there were more than 5,000 citizen comments in their comprehensive plan; it would be helpful to reference that information regarding airport issues in public involvement planning.

Other group suggestions included:

- Adding potential federal regulations regarding new fuel to the conversation
- Involving DEQ in the Master Plan conversation

Sean Loughran presented information on the Master Plan scope of work (see attachment A: 2018 HIOMP Scope of Work PowerPoint presentation.) He said one challenge is that many people have different interests and knowledge coming into a Master Plan. An early goal is to educate community members and raise awareness about airport issues. He said the Master Plan would cover Environmental Noise Modeling. AEDT (aviation environmental design tool) is the new model that combines noise and emissions. The Port's expectation is that the Noise Consultant will be well versed in it.

Next Steps

In discussion of next steps, Zenn asked the group if it generally agreed on the following differences between a new PAC and HARE. The PAC: 1) will be a more robust group; 2) will have a different focus than HARE; 3) will certainly include HARE members as part of the new configuration.

The group discussed the current subcommittees' recommendation processes and agreed to provide presentations on findings by the June HARE meeting and:

- Phil Stenstrom and Fred Hostetler to talk offline regarding reliable data from monitors.
- Bob Braze has observed noise levels at and around the airport and will compile information into report/presentation.
- Henry Oberhelman will compile and provide Charlie data research.

- A possible date for the next HARE meeting was June 1, 2016. The Port proposed half of the meeting should involve a public issue identification exercise, and other half should be the HARE meeting. The group discussed allowing a little more time to advertise and promote this meeting. The Port will look into other date options and get back to the full HARE group.
- The Port will confirm the last HARE meeting will occur in September, and the group asked the Port to communicate the meeting results to city, county and other who could not attend.

Last Thoughts

- Mike Gallagher suggested the PAC come up with an effective decision-making process going forward.
- Brian Lockhart expressed hope that the new PAC will have improved attendance.
- Henry Oberhelman stated the new Master Plan sounds encouraging and hopes it will raise reasonable expectations.

Action Items

- Port to confirm dates with HARE for the next meetings

Lead Emissions from the Hillsboro Airport and Public Health: An Overview of the Issue and Options for Further Characterization of Risks

Christina Baumann, MD, MPH
Matthew Davis, MPH

June 2016

Executive Summary

Lead is an environmental pollutant that has negative and potentially irreversible health effects even at low levels of exposure. Identification of sources of lead and prevention of exposure are key interventions to address lead poisoning (ACCLP 2012). This paper outlines what is currently known about the health effects of lead, blood lead levels locally, and lead emissions from the Hillsboro Airport, and reviews public health approaches that can be used to evaluate health risks.

Lead Poisoning in Oregon

The prevalence of lead poisoning is low in Oregon and has declined along with national trends. In Washington County, population lead poisoning statistics are not comprehensive. Approximately 3% of young children receive tests each year, leaving many at risk children untested. From 2009-2014, there were on average six cases per year of young children with confirmed elevated blood levels (RAID 2015). There continue to be many sources of lead exposure in the environment, and some sources are a greater threat to public health than others due to factors that contribute to the degree of exposure. Lead based paint in older homes remains a major source and area of concern for public health.

Lead Emissions at the Hillsboro Airport

Efforts to model the ambient concentrations of lead in the air at and around Hillsboro Airport have yielded results well below the National Ambient Air Quality Standard of 0.15 µg/m3. Environmental sampling data (air, soil and water) for the Hillsboro Airport is limited. Sampling data from other aviation facilities is rarely generalizable due to site-specific dynamics such as prevailing wind patterns and the location and duration of flight operation stages, such as run-up. The available data specific to the Hillsboro Airport indicates the presence of lead at levels below health-based standards.

Conclusion

Public health has processes, tools and techniques to assess environmental health hazards, which include health risk assessments, health impact assessments, and rapid health impact assessments. Based on the searches and information reviewed for this paper, it is clear that a rapid health impact assessment is unlikely to yield additional literature to further our understanding of the health impact of the Hillsboro Airport. If there is a proposed action, then a health impact assessment would be an appropriate approach to assess the impact of the policy, project or plan on the health of a population.

A health risk assessment with an environmental sampling component could be used to determine if lead has accumulated in the local environment and whether this leads to human lead exposure in those on or around the Hillsboro airport grounds. While there are limitations in the environmental data and local blood lead level data, the available data about lead emissions from the Hillsboro Airport do not suggest that it presents an environmental health threat to the community adjacent to the airport.

With ongoing efforts by the Federal Aviation Administration and the Environmental Protection Agency to phase out leaded aviation gasoline, emissions from the Hillsboro Airport are expected to decline or cease in the coming years. Public health is supportive of these efforts to further reduce lead emissions.

Introduction

Lead is an environmental pollutant that has negative health effects even at low levels of exposure. Fortunately, lead poisoning in the children living in the United States (U.S.) has declined due to the policies prohibiting the continued use of leaded gasoline in automobiles, lead-based paint, and lead solder in plumbing. Despite these changes, an estimated 450,000 children in the U.S. have blood lead levels above the reference value. Because there is no safe level of lead exposure and the effects of lead may be irreversible, identification of sources of lead and prevention of exposure are key interventions (ACCLP 2012).

Hillsboro Airport is a known source of environmental lead due to the use of leaded gasoline in piston engine aircraft. However, it is currently unclear to what degree aviation gas lead emissions contribute to human lead exposure. There continue to be many sources of lead exposure in the environment, and some sources are a greater threat to public health than others due to factors that contribute to the degree of exposure. Lead based paint in older homes remains a major source and area of concern for public health.

This paper outlines what is currently known about the health effects of lead, blood lead levels locally, lead emissions from the Hillsboro Airport, and reviews public health approaches that can be used to evaluate health risks. It is not intended to be an exhaustive review of available literature and data. Rather, the intent of this paper is to summarize what is known and to discuss where, from a public health perspective, data gaps exist.

Sources of Lead and Health Effects of Exposure

Lead

Lead is a naturally occurring metal, found in various ores in the Earth's crust. It is dense, durable, resistant to corrosion, malleable and has multiple industrial uses. The amount of lead in the environment (outside of ore deposits) increased over the past three hundred years as a result of human use in paint, gasoline, mining, and commercial operations (ATSDR 2007). Lead is very stable and can accumulate in the environment (ATSDR 2012).

Lead exists by itself as a metal or combined with other elements as a variety of compounds. Two major groups of compounds are organic and inorganic lead. Inorganic lead (e.g. lead oxide, lead chloride) is the most commonly found form, which is the form found in old paint, soil, and various products. Organic lead is lead combined with carbon (e.g. tetraethyl lead, tetramethyl lead). Leaded gasoline contains organic lead, and past use of leaded gasoline in automobiles has caused contamination of soils, especially along roadways. The form of lead can affect the pathways of exposure and amount of absorption by humans (ATSDR 2012).

Sources of Lead

While lead is a naturally occurring metal, high levels found in the air, water, soil, and dust are primarily due to human activities. Important sources of environmental contamination include mining, smelting, manufacturing, recycling, incineration, leaded paints, and leaded gasoline. Lead is also used in many products, for example pigments, solder, stained glass, crystal vessels, ammunition, ceramic glazes, jewelry, toys, and in some cosmetics and traditional medicines. Lead pipes or pipes joined with lead solder, present in older construction, may contaminate drinking water (ATSDR 2007).

Lead does not degrade and will persist in the environment. Lead introduced into the air is removed by rain and by falling to land or into surface water. Lead falling on soil is strongly absorbed and remains in the upper layer of soil. In the U.S., the amount of lead emitted into the air has decreased substantially since leaded gasoline was banned for highway transportation in 1996. Important sources of lead in dust and soil include ongoing and past air emissions and weathering of lead-based paints applied to structures before the use in paints was banned in 1978. In general, very little lead is found in surface or groundwater used for drinking water (ATSDR 2007).

Health Effects of Lead

Lead exposure is a significant health concern because even low levels of lead in the body can have negative effects that may be irreversible. Exposure to lead can occur through ingestion, inhalation, and dermal contact. Most human exposure occurs through ingestion or inhalation. Organic lead may be absorbed across the skin so dermal contact is a pathway of exposure to organic lead, but is less likely for inorganic lead. Since the elimination of lead from automobile gasoline, dermal exposure is not a significant pathway of lead exposure for the general population (ATSDR 2012).

Adults absorb about 20% of ingested lead, except organic lead, which is almost completely absorbed. Almost all lead inhaled into the lower respiratory tract is absorbed. Once in the body, lead is distributed to organs, tissues, and bone. Lead is primarily stored in the mineralizing tissues (bone and teeth), and stored lead can mobilize and reenter blood and organs. Lead that is not stored in the body will be excreted in urine or feces. Adults are better able to clear lead than children. Continued exposure to lead will lead to accumulation in the body and is associated with negative impact on health (ATSDR 2007).

Clinical manifestations of lead poisoning vary depending on the dose and duration of exposure as well as the age of the exposed individual. Lead poisoning can affect any organ system in the body. Acute poisoning can result in disorders of the digestive system, kidney damage, anemia, and a range of neurological problems including cognitive deficits, peripheral neuropathy, seizures, and encephalopathy. Exposure to large amounts of lead can be lethal. Chronic exposure in adults is associated with hypertension, increases in all cause mortality and cardiovascular disease mortality, decline in neurocognitive function, psychiatric symptoms (phobic anxiety, depression, and hostility), peripheral neuropathies, and hearing problems. Lead also has effects on the reproductive system and chronic lead exposure can lead to changes in male endocrine function and sperm production. In pregnant women, it

is associated with miscarriage, stillbirths, and preterm delivery. Lead can easily cross the placenta and can affect neurological development of the fetus (Goldman 2015). Lead affects the neurological development of children, resulting in cognitive problems such as decreased learning, memory, verbal ability, and intelligence quotient (IQ). It is also associated with behavioral problems such as hyperactivity or Attention Deficit and Hyperactivity Disorder (ADHD). The neurological and behavioral effects of lead are believed to be irreversible (Hurwitz 2014).

Risk Factors for Lead Poisoning

Children have greater vulnerability to lead because of increased risk of exposure and differences in lead absorption and excretion. Compared with adults, children are more likely to have contact with contaminated surfaces due to playing on the ground and increased ingestion as a result of behaviors like mouthing and hand-to-mouth contact. Once ingested or inhaled, children absorb a larger fraction of lead than adults. There are excretion differences as well, with children younger than two years of age retaining approximately one-third of absorbed lead compared with adults that retain only one percent (ATSDR 2007). Children younger than six years of age have an incomplete blood-brain barrier, which leads to greater lead entry into the nervous system. Nutritional deficiencies, such as iron deficiency, can further compound the risk by causing more lead absorption from the gastrointestinal system (Hurwitz 2014).

Due to the sources of lead exposure and the distribution of these sources, additional risk factors for lead poisoning include:

- minority race/ethnicity
- urban residence
- low income
- low educational attainment
- older (pre-1950) housing
- recent or ongoing home renovation or remodeling
- pica exposure[1]
- use of ethnic remedies
- use of certain cosmetics
- exposure to lead-glazed pottery
- occupational and para-occupational exposures
- recent immigration (USPSTF 2006).

Detection of Lead Poisoning

Lead poisoning can be detected by testing blood lead levels (BLL), either through a venous blood sample or capillary blood sample. BLL is a measure of recent or ongoing exposures but does not measure the

[1] Pica: abnormal craving and eating of nonfood substances that can occur in nutritional deficiency states or in some forms of mental illness

total body burden of lead since lead is distributed throughout the body and primarily stored in the bone (ATSDR 2012).

In 2012, the CDC revised its terminology and recommendations for elevated blood lead levels in children. This was done in recognition of the evidence that lead is associated with harmful effects on neurodevelopment and health at levels less than 10 micrograms per deciliter (μg/dL), which had previously been the "level of concern". The CDC stated that no safe blood lead level has been identified for children. In 2012, the threshold for public health action was set based on the distribution of blood lead levels in the U.S. population. Five micrograms per deciliter is the 97.5th percentile based on the 2007-2010 National Health and Nutrition Examination Survey's (NHANES) blood lead distribution in children (CDC 2012).[2]

The prevalence of childhood lead poisoning has been declining (CDC 2013), and as a result, there has been a movement away from universally screening children to a more targeted approach based on community and individual risk factors (Wengrovitz 2009). Universal screening may still be appropriate for communities in the U.S. that have a high percentage of housing built before 1950 and a significant percentage of young children with BLLs ≥10 μg/dL (ACCLP 2012). It is also recommended for children who are recent immigrants, foreign adoptees, or refugees (CDC nd).

In Oregon, it is recommended that all children be assessed for risk of lead poisoning by administration of the Oregon Lead Risk Assessment Questionnaire at ages one and two years, and between three and five years of age if not previously screened. A "yes" or "don't know" response indicates that a blood lead level should be done. The questions include:

- Has your child lived in or regularly visited a home, child care, or other building built before 1950?
- Has your child lived in or regularly visited a home, child care, or other building built before 1978 with recent or ongoing painting, repair, and/or remodeling?
- Is your child enrolled in or attending a Head Start program?
- Does your child have a brother, sister, other relative, housemate or playmate with lead poisoning?
- Does your child spend time with anyone that has a job or hobby where they may work with lead? Examples: painting, remodeling, auto radiators, batteries, auto repair soldering, making sinkers, bullets, stained glass, pottery, going to shooting ranges, hunting or fishing.
- Do you have pottery or ceramics made in other countries or lead crystal or pewter that are used for cooking, storing or serving food or drink?
- Has your child ever taken any traditional home remedies or used imported cosmetics? Examples: Azarcon, Alarcon, Greta, Rueda, Pay-loo-ah, or Kohl.
- Has your child been adopted from, lived in, or visited another country?
- Do you have concerns about your child's development or behavior?

[2] CDC conducts NHANES, which is a continuous, cross-sectional, representative survey of the noninstitutionalized U.S. civilian population.

Oregon requires that all elevated blood lead levels (EBLL) be reported to the state and local health departments. The purpose of this is to ensure abatement of a lead source, appropriate treatment and follow-up of EBLLs, and education of the patient or parents. In addition, all tests performed are required to be reported regardless of result. However, the use of the Oregon Lead Risk Assessment Questionnaire is not reportable, so it is impossible to track how often the questionnaire is used and influences lead testing activity.

Lead Poisoning Statistics in Oregon and Washington County

The prevalence of lead poisoning is low in Oregon and has declined along with national trends. Between 2004-2008, approximately 3.8% of Oregon's population under age six (10,677 children) was screened annually, and about 0.5% of children screened had elevated blood levels[3] (OCLPPP 2010).

In Washington County, population lead poisoning statistics are not comprehensive and many at risk children are not being tested. Of the 45,000 children under the age of six in Washington County, approximately 3% (on average 1260 children) are tested for elevated blood lead levels per year. From 2009-2014, there were on average six cases per year of young children with confirmed elevated blood levels (BLL >5 µg/dL) (RAID 2015).

Concern for under testing is based on known presence of potential sources of lead in the community and of at risk populations. Pre-1979 housing is a major risk factor for lead poisoning due to the use of lead paint. Based on the 2009-2012 American Community Survey, there are 87,641 housing units in Washington County that were built in 1979 or before (41% of all housing units) and 21,450 housing units were built in 1959 or before (10% of all housing units). Living in poverty is another risk factor associated with childhood lead poisoning. About 15% of families with children under the age of five years old live in poverty in this county. Using this statistic, an estimated 6,800 children under the age of six in Washington County live in poverty (RAID 2015).

Lead Emissions from Hillsboro International Airport

Review of Relevant Literature

The body of epidemiological literature suggesting a link between leaded aviation gas and childhood blood lead levels is compelling, albeit limited. Published in 2011, *A Geospatial Analysis of the Effects of Aviation Gasoline in Childhood Blood Lead Levels* is the most comprehensive attempt at assessing the relationship between residential proximity to general aviation operations and elevated blood lead levels in children. The study compared the blood lead levels of children living near airports in Six North Carolina Counties to those living farther away from airports in the same counties. Several factors were controlled for, including age of home and season of blood lead testing. The study demonstrated a small, but statistically significant, impact on blood levels for children living within 1000 meters of an airport (Miranda 2011).

[3] Defined prior to 2012 as less than or equal to 10 µg/dL

The study's authors note several limitations including:

- The study did not account for prevailing wind patterns
- Because the authors categorized residential proximity to the airport (0-500m, 500-1000m etc.), the results do not consider how ambient concentrations may differ on a micro-scale. This notion of detecting the presence and impact of air pollution "hot-spots" is difficult to assess but is often of high concern to communities perceiving an impact.

The work by Dr. Miranda suggests that continued research about exposure to leaded aviation gas is warranted.

Review of Environmental Data

The Environmental Protection Agency (EPA) maintains National Ambient Air Quality Standards for several pollutants, including lead. The current standard for lead is a three-month average not exceeding 0.15 µg/m3 (EPA 2008). Oregon complies with the standard throughout the state (DEQ 2015). EPA requires lead monitoring at airports that emit one or more tons of lead per year. The Oregon Department of Environmental Quality is responsible for managing the state's air quality monitoring network but is not required to monitor for lead at Hillsboro Airport, because annual emissions are estimated to be below the one ton per year monitoring threshold (DEQ 2015). EPA emission inventories suggest Hillsboro Airport emissions of approximately 0.58 tons per year.

The EPA recently conducted an airport lead monitoring study to determine whether airports that emit less than 1.0 ton per year have the potential to cause surrounding areas to exceed the National Ambient Air Quality Standard for lead. The study included airports with emissions between 0.5 ton to 1.0 ton per year. Initial results from the study indicated exceedances of the national standard at only two of the 17 airports: San Carlos Airport and McClellan-Palomar Airport, both in California (EPA 2013a). These facilities emit 0.53 (EPA 2015a) and 0.59 (EPA 2015b) tons per year, respectively.

Between 2012 and 2015 DEQ operated an air-toxics monitor capable of sampling for lead at Hare Field. Hare Field is a recreational sports facility approximately one mile from Hillsboro Airport. Monitored concentrations of lead consistently remained substantially below the National Ambient Air Quality Standard of 0.15 µg /m3 throughout the monitoring period, less than 5% of the standard (DEQ 2014). It is important to note that this monitoring effort was not intended to measure "fence line" exposure to emissions associated with the airport. Levels of lead detected at the Hare Field monitor may not be representative of concentrations present in closer proximity to Hillsboro Airport (DEQ 2013a).

Although there is a lack of data from air quality monitoring, both the DEQ and the Port of Portland have engaged in efforts to model concentrations of lead in the air at and around Hillsboro Airport:

- **DEQ Model:** In 2010 DEQ conducted a series of comprehensive regional models estimating concentrations of 15 toxic air pollutants, including lead. This modeling effort included two phases, one to establish a baseline and one to project concentrations for the year 2017. Data refinements occurred between the two phases to fill gaps, remove emissions that no longer existed, improve the position of emission sources, update model assumptions, and improve

emission factors. Specifically, the second model better represented the vertical distribution of emissions based on takeoff and landing patterns of general aviation operations. The model results yielded ambient concentrations of lead below the national standard at and around Hillsboro Airport (DEQ 2012a).

- **Port of Portland Model:** The Port commissioned its own modeling to fulfill requirements related to assessing the environmental impacts of adding a third runway at Hillsboro Airport. The results of this modeling also found concentrations at and around Hillsboro Airport to be below the national standard (CDM Smith 2010).

Neither model includes emissions from aircraft "run-up", a stage of the flight operation where a pilot performs a series of engine operational and safety checks prior to takeoff. It should be noted that the Port of Portland (and its contractor) are required by the Federal Aviation Administration to use the model it did. In the development and evaluation of air quality modeling techniques for aviation lead emissions, the EPA found that single-engine run-up was the most important source contribution to the maximum Pb concentration. Sensitivity analyses found that the time spent on run-ups had the greatest impact on the spatial dispersion of lead emissions. EPA notes that in assessing lead emissions from other airports (EPA research was limited to the Santa Monica Airport), resources should be dedicated to "conduct an on-site survey of the duration and location of LTO [landing and takeoff phases] modes for piston-engine aircraft, with particular emphasis on the duration of run-up times and location(s)" (EPA 2010).

As part of their 1200-Z stormwater discharge permit, the Port of Portland is required to routinely sample for the presence of lead (among other contaminants) in stormwater runoff at the Hillsboro Airport. Data shared by the Port show that of the 91 samples collected between 1994 and 2014, 25 had detectable levels of lead and two of those samples found lead at levels exceeding the state benchmark (0.04 mg/L) (Port of Portland 2015). In 2014, after six years of sampling showed no detectable levels of lead, the Port of Portland was granted a stormwater monitoring waiver. Sampling will resume in 2017 when their permit is renewed. No guidance was identified related to the interpretation of stormwater sampling results in the context of assessing concentrations of lead in the ambient air.

Although the Port is not required to routinely sample for lead in the soil and groundwater at Hillsboro Airport, samples were taken in 2007. Lead was undetected in the groundwater samples. Lead was detected in soil samples (Port of Portland 2015), but at levels well below Oregon's Risk Based Concentration of 400 µg /m3 (DEQ 2012b) and below the regional background level of 79 µg/m3 (DEQ 2013b). Oregon's lead-in-soil risk based concentration is consistent with guidance from the EPA which states that lead above 400 µg/m3 in "play areas" presents a serious health hazard to children (EPA 2001).

Data on the accumulation of lead in soils from aviation emissions is limited. When sampling data does exist, it is rarely generalizable due to site-specific dynamics such as prevailing wind patterns and the location and duration of flight operation stages, including run-up (M. Pedde, Personal Communication, August 27 2015). Deposition of lead in soils is an important consideration, the EPA notes in its most

recent Integrated Science Assessment of lead that "The primary contribution of ambient air Pb to young children's blood Pb concentrations is generally due to ingestion of Pb following its deposition in soils and dusts rather than inhalation of ambient air" (EPA 2013b). More data on the presence (or absence) of lead contamination in the soils in and around the Hillsboro Airport would allow for a more comprehensive exposure assessment.

Review of Health Surveillance Data

In 2011 the Oregon Health Authority conducted a study modeled after the work of Dr. Miranda et al. The study attempted to assess what, if any, relationship exists between elevated blood lead levels and residential proximity to Hillsboro Airport. The final report from the Oregon Health Authority notes several limitations in the available data including (OHA 2011):

- Variability across testing equipment to detect concentrations of lead below 5 µg/dL
- The inappropriate coding of low values as "0"
- The small number (seven) of elevated blood-lead level cases included in the analysis
- The causes of elevated blood levels are multi-factorial and in many cases are unknown due to the lack of comprehensive case investigations

Because of these limitations no assertions can be made about the presence or absence of a correlation between residential proximity to Hillsboro Airport and elevated blood-lead levels.

Public Health Approaches

The Public Health System uses a variety of processes, techniques and tools to assess and address environmental health hazards. The following is a list of approaches that may aid in better understanding any public health risk associated with lead emissions from Hillsboro Airport.

Health Risk Assessment

Also known as epidemiological investigations, health risk studies, and exposure investigations, these processes aim to identify and assess the public health impacts of an exposure to a particular public health threat. The EPA maintains guidance on assessing the health risks of lead contamination in the environment (EPA 2014). The guidance is organized into four steps, consistent with most risk assessment processes:

1. **Data Collection and Data Evaluation:** This step involves developing, implementing and evaluating an environmental sampling plan and collecting health effect/outcome data, in this case blood lead levels.
2. **Exposure Assessment:** Exposure assessment is the process of determining the frequency, duration and route of exposure to a contaminant.

3. **Toxicity Assessment:** Toxicity assessment involves estimating the potential for adverse health outcomes. The toxicity of environmental lead contamination can be expressed by the percentage of the target population with blood levels that exceed CDC's level of concern.
4. **Risk Characterization:** Risk characterization is the culmination of information from the previous steps and can result in recommended mitigation or intervention strategies. Risk characterization can also serve to identify limitations or uncertainties in the available information.

Health Impact Assessment (HIA)

Health Impact Assessments are defined by the National Research Council as, "A systematic process that uses an array of data sources and analytic methods, and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population. HIA provides recommendations on monitoring and managing those effects." (National Research Council 2011). Although the specific methods vary, most HIAs follow a uniform process of six steps:

1. **Screening:** Determine the value and need for HIA
2. **Scoping:** Clarify and prioritize issues to focus on in the HIA, methods for analysis, and a work plan;
3. **Assessment:** Two parts that include: a) Conducting research on existing conditions; b) Identifying the effects of the project, plan, or policy on health;
4. **Recommendations:** Identify actions to address any harms identified
5. **Reporting:** Write a report and communicate its findings and recommendations
6. **Monitoring**: Track how the HIA affected decision-making processes, the actual decision, and effects of the project on health

HIAs differ from Health Risk Assessments in that they are not intended to assess the health impacts/effects of a current situation or past exposure, but rather identify potential health impacts resulting from a proposed change in the environment (policy, project or plan).

The National Environmental Protection Act and similar state statues require that Environmental Impact Statements (EIS) include consideration and analysis of health effects of certain policies or projects. Although these requirements rarely call them out by name, HIAs can be an appropriate way to expand on the somewhat limited practice of health analysis in the EIS. While health analyses in EISs typically assess the discrete relationship between a particular contaminant and particular health outcome, HIAs afford the opportunity to consider broader impacts to health (Human Impact Partners 2013). This might include the health effects resulting from changes to the physical, social and economic environment, the potential to mitigate or magnify existing health disparities and an analysis of cumulative impacts.

Rapid Health Impact Assessment

Rapid HIAs are designed to meet the same goal; understand the health impacts of a policy, plan, or project and recommend actions to mitigate or prevent those impacts. Rapid HIAs occur over a shorter

period of time and are generally a less resource-intensive alternative to a full HIA. It has been reported that in order for a rapid HIA to be successful, certain conditions must be present (Furber et al 2007). These include:

- The health agency has experience in conducting HIAs.
- An existing relationship between the health agency and the proponent of the policy, project or plan.
- There is not a need to collect new data. The necessary data exists and is in an accessible form.
- A literature review on the health determinants and outcomes is available.

Conclusion

Lead is a toxin that is linked to many negative health effects, including neurodevelopmental disorders in children. Notable decreases in blood lead levels in children over recent decades have resulted from changes in the use of lead-containing products like gasoline, paint, and solder. However, lead continues to be used in products, industry, and prevail in the environment due to historical uses, resulting in human exposures.

In Washington County, the Hillsboro Airport is a source of lead emissions and the question has been raised whether or not it is a significant source of human lead exposure. Emissions inventories, emission dispersion modeling, and direct monitoring are means to assess whether an industry is in attainment of the standards set by the Environmental Protection Agency. These standards are established to be protective of public health, including sensitive populations. Two separate modeling studies (one performed by the Department of Environmental Quality and one conducted by an environmental consultancy) were conducted to determine if levels of lead in the air exceeded the National Ambient Air Quality Standard of 0.15 μg/m3. Both studies found levels of lead significantly below the standard on airport grounds and in adjacent residential communities. Blood lead levels are a means to detect whether a population is being significantly exposed to a source of lead. The prevalence of lead poisoning is low in Washington County and Oregon overall, though testing rates are also low.

Public health has processes, tools and techniques to assess environmental health hazards, which include health risk assessments, health impact assessments, and rapid health impact assessments. Based on the searches and information reviewed for this paper, it is clear that a rapid health impact assessment is unlikely to yield additional literature to further our understanding of the health impact of the Hillsboro Airport. If there is a proposed action, then a health impact assessment would be an appropriate approach to assess the impact of the policy, project or plan on the health of a population. However, at this time we are trying to understand if there is a public health problem, and for this purpose, a health risk assessment may be the most helpful strategy. A health risk assessment framework can be used to develop a stepwise plan of gathering and assessing data. Each step can inform the need to investigate further. For example, an environmental sampling plan and exposure risk assessment could inform the need to collect health effect/outcome data, in this case blood lead levels. Health risk assessments and

health impact assessments can be resource intensive to conduct but are helpful in defining a problem and identifying strategies to mitigate or eliminate health risks.

A health risk assessment could address questions left outstanding due to limitations in existing data. Namely, if lead has accumulated in the local environment and whether this leads to human lead exposure in those on or around the Hillsboro airport grounds. While there are limitations in the environmental data and local blood lead level data, the available data about lead emissions from the Hillsboro Airport do not suggest that it presents an environmental health threat to the community adjacent to the airport.

With ongoing efforts by the Federal Aviation Administration and the Environmental Protection Agency to phase out leaded aviation gasoline, emissions from the Hillsboro Airport are expected to decline or cease in the coming years. Public health is supportive of these efforts to further reduce lead emissions.

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ASSESSING THE PUBLIC HEALTH IMPACT OF LEAD EMISSIONS FROM THE HILLSBORO AIRPORT

HILLSBORO AIRPORT ROUNDTABLE EXCHANGE
JUNE 29TH, 2016

BACKGROUND

Asked by Port of Portland to describe how public health could assess the health impacts of lead emissions from the airport.

Methods:

- Conducted a literature review and review of available primary data.
- Summarized public health tools for assessing health risk or health impacts.
- Summarized currently available information and gaps in information.

OUTLINE OF PRESENTATION

Purpose: Share knowns and unknowns about airport lead emissions

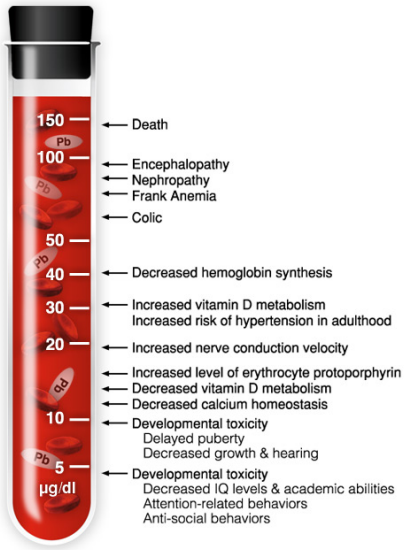
Agenda:

- Background on health effects of lead
- Key findings from literature review
- Available data on blood lead levels in Washington County
- Available data from environmental modeling and sampling

FINDINGS AND CONCLUSIONS

- Available data do not suggest that lead emissions from the Hillsboro airport are a significant source of lead exposure in Washington County.
- There are gaps in data
- A blood lead test is the only way to know if a child has an elevated level
- There is no safe blood lead level
- Reducing lead in the environment promotes public health

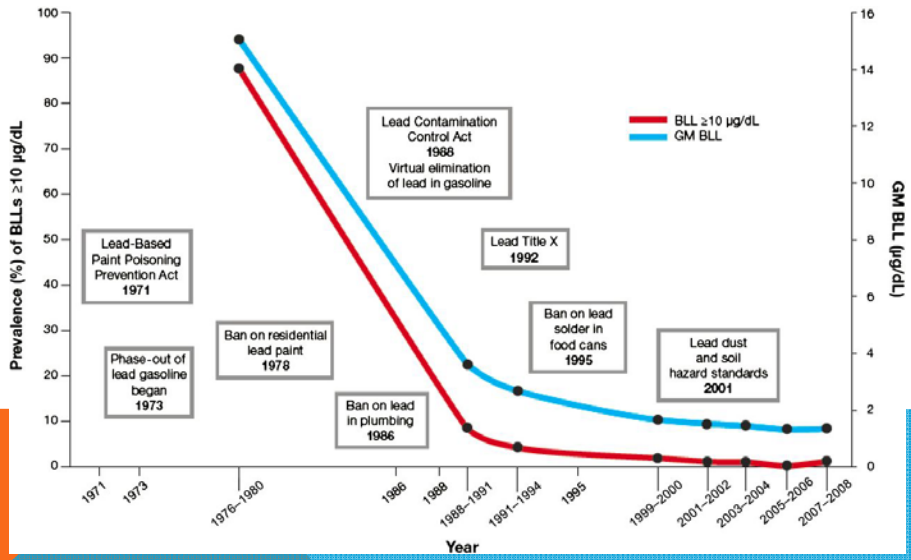
HEALTH EFFECTS OF LEAD



- A harmful neurotoxin
- Health effects for both adults and children
- Most vulnerable are young children, and pregnant or lactating women
- There is no safe blood lead level

Image credit: Canadian Atlas of Environmental Health http://www.ehatlas.ca/lead/human-impact/health-concerns

TIMELINE: CHANGE IN CHILD BLOOD LEAD LEVELS

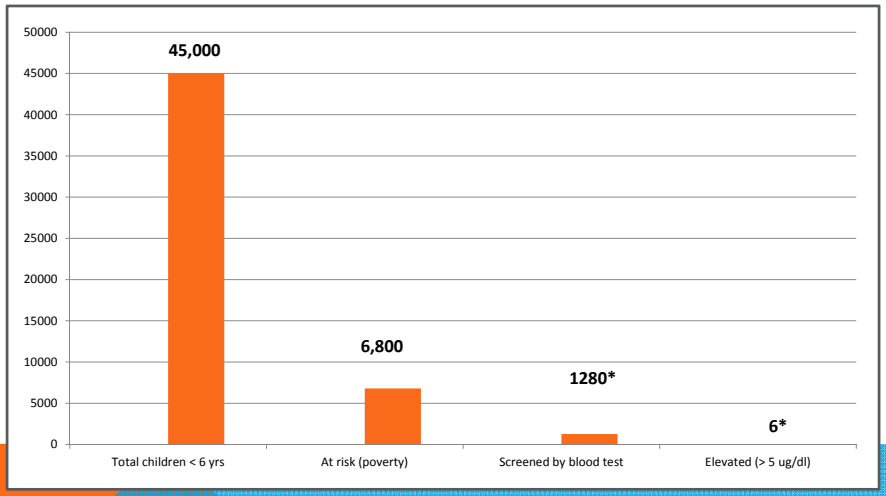


Source: American Academy of Pediatrics. (2016). Policy Statement: Prevention of Childhood Lead Toxicity

SOURCES OF LEAD EXPOSURE

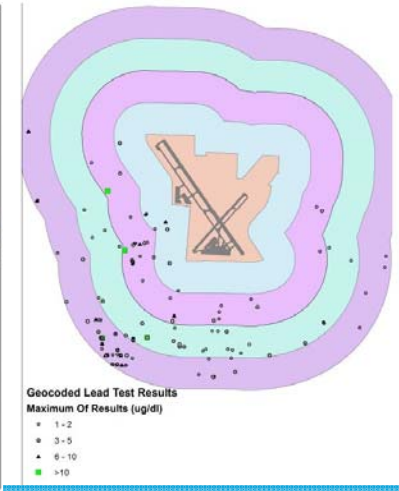
- Lead paint and paint dust in older (pre-1978) housing
- Occupational exposure and "2nd hand exposure"
- Hobby sources (leaded glass, lead shot/bullets, lead fishing weights)
- Cosmetics and folk medicine
- Tableware (lead-glazed ceramics, leaded crystal)
- Contaminated soil (roadways, lead smelters, other industry)
- Water from lead-containing plumbing or fittings
- Outside U.S. exposures
- Other sources (toys, candies/wrappers, cans)

WASHINGTON COUNTY CHILD BLOOD LEAD TESTING



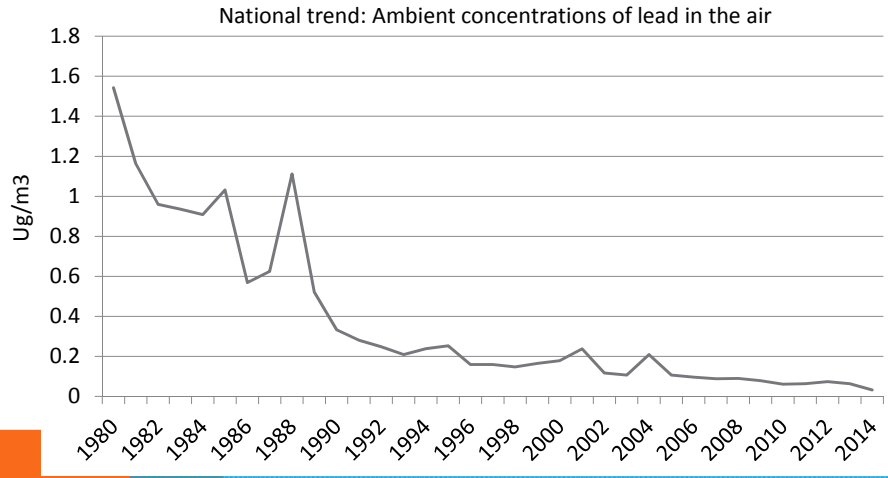
* Annual average from 2009-2014 data

GEOSPATIAL ANALYSIS : CHILDREN LIVING NEAR AIRPORTS



Sources:
Miranda, et.al. (2011). A Geospatial Analysis of the Effects of Aviation Gasoline on Childhood Blood Lead Levels. Environ Health Perspect 119:1513–1516.
Oregon Health Authority (OHA). (2011) [Graphic representation and analysis of blood lead level surveillance data for children residing within 2000m of the Hillsboro Airport].

LEAD IN AIR



AVIATION-RELATED LEAD EMISSIONS

Significant source of *ongoing* lead emissions

Hillsboro Airport emissions

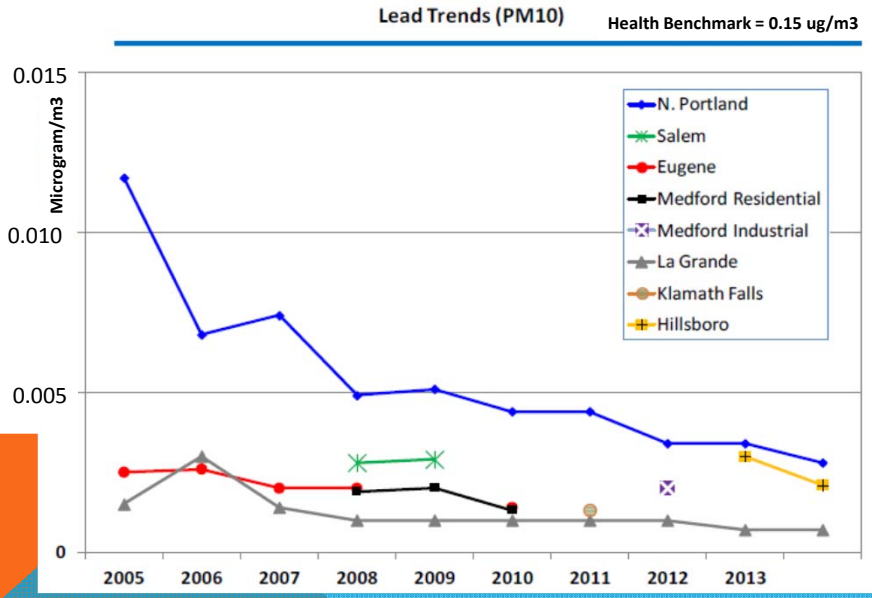
Regulatory framework

- Ambient concentrations
- Fuel standards
- Monitoring requirements

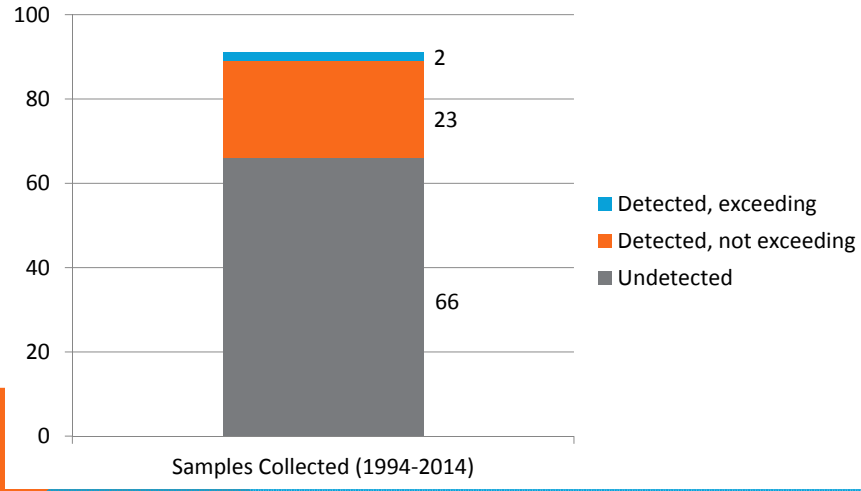
REVIEW OF ENVIRONMENTAL DATA – AIR MODELING

Regulatory Thresholds	
National Ambient Air Quality Standard	0.15 micrograms/cubic meter (ug/m3)
Oregon Ambient Benchmark Concentration	0.15 ug/m3
Air Modeling at HIO	
National Air Toxics Assessment	0.00647 ug/m3
Oregon DEQ Model	0.00331 ug/m3
Port of Portland (CDM Smith) Model	0.00405 ug/m3

REVIEW OF ENVIRONMENTAL DATA – AIR MONITORING



REVIEW OF ENVIRONMENTAL DATA - STORMWATER



FINDINGS AND CONCLUSIONS

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- There are gaps in data
- A blood lead test is the only way to know if a child has an elevated level
- There is no safe blood lead level
- Reducing lead in the environment promotes public health

QUESTIONS & DISCUSSION

Christina Baumann, MD, MPH
Deputy Health Officer

Matthew Davis, MPH
Senior Program Coordinator

GEOSPATIAL STUDY: DISTANCE FROM AIRPORT & BLOOD LEAD LEVEL

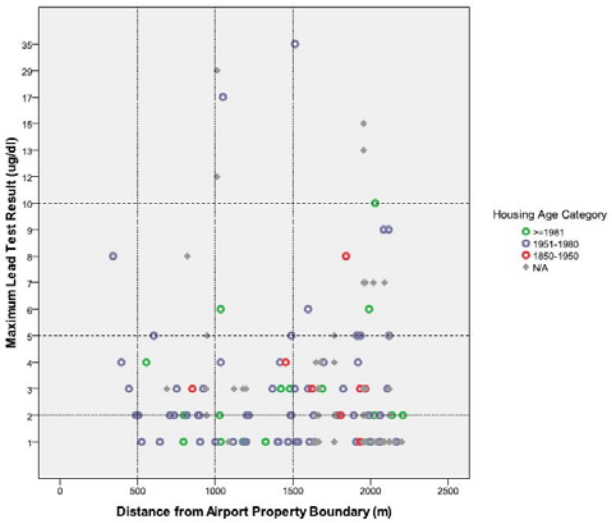

Image 5: Maximum Blood Lead for Individual vs Distance to Airport Property Boundary

Hillsboro Airport Roundtable Exchange
Aviation Fuel Subcommittee

June 29, 2016

Steve Nagy
General Aviation Manager, Port of Portland
Hillsboro Airport

Subject: Availability of Unleaded Aviation Fuel at Hillsboro Airport (HIO)

Dear Mr. Nagy:

As you are aware, the Hillsboro Airport Roundtable Exchange (HARE) has sponsored a subcommittee to review the feasibility and desirability of providing unleaded and ethanol free fuel, mogas, at HIO. The members of the subcommittee all believe there is a need for such provision and in reaching this position, we've considered the following: the report (BUSINESS CASE ASSESSMENT TO PROVIDE MOGAS AT PORTLAND-HILLSBORO AIRPORT by KB ENVIRONMENTAL SCIENCES, INC.) from your consultant in demonstrating that there appears to be a business case for providing such a fuel at HIO, albeit that there may be a small purchaser base; the Port's concerns regarding the mogas supply, as expressed by both yourself and David Breen, the Port's Senior Air Quality Manager; the FAA's plans for providing a replacement fuel for 100LL; and the community's concerns regarding the adverse health affects of the use of leaded aviation fuel. As a result of this work, we believe that there at least five important factors supporting the deployment of unleaded aviation fuel at HIO.

- Use of unleaded aviation fuel at HIO will improve environmental health for both residents adjacent to the airport and for workers on the airport. While studies to date indicate that airborne lead is below the NAAQS around the airport, the use of leaded fuel must expose adjacent populations to some lead exposure, and providing an unleaded fuel will move towards satisfying the CDC statements on "no allowable lead level."
- It appears likely that the FAA's replacement fuel (100UL) will be more expensive than the existing 100LL and will not necessarily be usable in all existing fleet aircraft. As a result, some pilots will no longer be able to use their aircraft. Availability of an unleaded fuel such as mogas will help preserve this segment of general aviation and thus enhance HIO's role as a general aviation airport.
- The research phase of the 100UL fuel is currently scheduled for completion at the end of 2018 and will be followed by an eight year deployment period, thus there will be an extended period of leaded fuel usage. With usage of existing infrastructure at the airport and the addition of available and inexpensive dispensing equipment, it appears

that mogas availability is close at hand and could soon be improving the environment around HIO.

- Provision of unleaded fuel at HIO strongly works towards the Port's declared goals in sustainability and reducing the Port's environmental footprint.
- Having some awareness of the Port's constraints and conditions in dealing with the FAA, we suggest that this effort might initially be viewed as a "Pilot Project" so as to expedite implementation and to assist with development of demand for the fuel.

We've attached a resolution that summarizes all of the justifications for implementing an unleaded fuel at HIO. We look forward to working with you and Port staff as this project unfolds.

HARE members that contributed to this work include: Fred Hostetler, Kimberly Culbertson, Bob Flansberg and Mike Gallagher, as well as the undersigned.

Yours truly,

Fred Hostetler - VicChair.

Brian Lockhart, Chairman - HARE

Henry Oberhelman, Chairman - Aviation Fuel Subcommittee

Cc:

Daren Griffin, Director, Airport Operations, Port of Portland

David Breen, Sr. Mgr., Air Quality, Port of Portland

HARE Committee Members

Attachment: Resolution re Unleaded Aviation Fuel at HIO

HARE Resolution: **Making Unleaded Automobile Fuel without Ethanol (MOGAS) Available at the Hillsboro Airport**

Whereas elimination of lead in aviation fuels is a national environmental objective, and

Whereas the Port of Portland has an established track record of incorporating cleaner burning fuels, and

Whereas, the FAA program to develop an unleaded fuel is not expected to be complete until 2018 at the earliest with up to an additional 8 years for deployment, and

Whereas, a significant number of general aviation aircraft can use MOGAS and will likely continue to use MOGAS even after the FAA developed fuel is available, and

Whereas, other airports including Medford OR have taken steps to make MOGAS available, and

Whereas, the use of MOGAS will result in an immediate reduction in lead emissions from the Hillsboro Airport, and

Whereas a source of suitable MOGAS is available in Hillsboro, and

Whereas storage suitable storage facilities are currently available at the airport,

HARE asks the Port of Portland working with airport businesses to make MOGAS available at the earliest opportunity at the Hillsboro Airport. Since demand is unknown, the plan should be both small scale and flexible, but with the anticipation of a long term requirement for MOGAS, even after an FAA developed fuel is available. It is anticipated that the Port will make some investment in startup costs, but the objective is to provide MOGAS at the lowest commercially supportable price. The HARE asks progress on this program be reported at each HARE meeting. Reports should include quantities sold.

Hillsboro Airport Master Plan Update
Project Advisory Committee 2017

Chris White

Community Affairs Director

Goals for Committee Composition

- Manageable size: 15 members or less
- Emphasis on Diversity and Inclusion: Membership represents diversity of whole community
- Broad spectrum of perspective, experiences and skills: Membership represents diverse views and abilities
- Preference for HARE members: When possible, those serving on HARE committee given preference

Proposed Hillsboro Airport Master Plan Advisory Committee membership

- City of Hillsboro
- FAA – Air Traffic Control
- Environmental/Regulatory Interest
- Washington County
- Citizen at Large (4)
- Citizen at Large (1) – Youth
- Airport Business Representative (2)
- Local Business Representative
- Port Commissioner
- Aviation Industry Professional Organization
- Regional Economic Development Representative

Proposed Selection Criteria

Committee members will have:

- Ability to analyze a high level of technical information and accurately share information with the community.
- Diversity of interest and viewpoints. A PAC member may represent multiple stakeholder perspectives.
- Breadth of understanding of the airport's relationship to the Hillsboro area/community.
- Understanding of the local airport as part of a transportation system/connectedness to the local, regional, state or national aviation system.
- Successful experience in working cooperatively and productively with a group or committee that has diverse interests. Ability to understand diverse viewpoints and work towards common goals.

Questions?