

City of Burien
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Memorandum

To: Honorable Mayor and Members of the City Council
From: Brian J. Wilson, City Manager
Date: August 3, 2020
Subject: City Manager's Report

I. INTERNAL CITY INFORMATION

A. Decline of FY2020 JAG Local Formula Grant [\(Page 9\)](#)

The regular local formula FY2020 federal Edward Byrne Memorial Justice Assistance Grant (JAG) solicitation was recently issued with Burien's allocation being approximately \$19,000. The City has been receiving these grants for many years and they are typically used by the Police Department for training and equipment. Starting in FY2017, these grants began including special conditions and certifications related to 8 U.S.C. 1373 on immigration and have been the subject of various lawsuits nationwide. Per recommendation of our City Attorney, we have declined the FY2020 JAG Local Formula grant. Attached is a copy of the letter sent declining these funds.

B. Suspension of Burien's Community Court [\(Page 10\)](#)

The King County District Court has informed us that it is with great regret that they must temporarily suspend the Community Court in Burien until such time as they are able to secure adequate funding to reopen. They anticipate that the suspension will be for at least one year, or longer, depending on the region's pace of economic recovery from the impacts of the COVID-19 pandemic. They have shared that they will continue to work with the small number of Burien Community Court participants, to give them the opportunity to successfully complete their Community Court Agreement, while being monitored in their regional court setting. Additionally, until Community Court in Burien can resume, King County District Court will continue to accept and encourage diversion opportunities and to seek alternatives to incarceration whenever possible and appropriate. For more information, please see the attached letter.

C. SCORE Transition to Medically Assisted Treatment

Score recently received a \$200K grant to develop and implement a Same Day Visit and Transportation Program. This program is expected to ensure there is no disruption in access to medication assisted treatment for opioid use disorder for individuals releasing from jail. Under this program, individuals released from custody will be taken directly to a medically assisted treatment provider to get set up on a continued program, instead of the current practice that relies on the offender to make the connections upon release. The goal of this program is to help individuals continue upon the behavioral health success they achieved in custody through a 'warm' handoff.

D. Community Development Update

Welcome Nicole Gaudette, Senior Long-Range Planner:

We are pleased to welcome Nicole Gaudette as Burien’s new senior long-range planner. Nicole comes to us with over 18 years of experience as a planner for multiple jurisdictions, most recently for the City of Mercer Island. Nicole has extensive experience with long-range/policy planning, along with expertise in permit planning and processes. She is known for her excellent technical skills, her skill in analyzing and communicating complex issues, and her ability to work with people from diverse backgrounds and across disciplines. Nicole is currently uploading a lot of information about the Burien’s Housing Action Plan and other projects, and she is scheduling time to get acquainted with people. Welcome Nicole!

Permit activity is brisk:

We monitor several metrics to understand how we are doing relative to construction activity in Burien. By the third week of July, our inspection activity is rivaling the volume of permits in March. Many thanks to our Building department staff Steven Blake, Kirk Gentile, Dan Cruz, Dan Pihlstrom and Sangeyah Badu—and our planning and front desk staff—who are working hard to provide customer service and keep permits moving.



Temporary Use of Parking Lots for Restaurant Dining:

We continue to receive requests from restaurants who wish to temporarily use parking lots for outdoor dining. This enables restaurants to expand their seating capacity during the Governor’s COVID-19 re-opening plan. The existing temporary use provisions in the Zoning Code allows for 60 days of operations. Thus far, two temporary use permits have been approved; two have applied; and we have talked with four additional restaurants who are interested in applying for permits. We will be discussing with you the possibility of temporarily enabling continued use of parking lots for dining through Phase 3 of the re-opening plan.

Housing Action Plan Engagement Launching:

We are officially launching our public engagement for the Housing Action Plan, with an affordable housing panel discussion on July 23, 2020. Other activities include one-on-one interviews, focused group discussions with stakeholders, and community-wide virtual events. Our Housing Action Plan website will go live by August 3, 2020. Senior Planner, Nicole Gaudette, is quickly getting up-to-speed on the Housing Action Plan and will be leading the effort through mid-2021.

Trees:

Planner Brandi Eyerly has been evaluating Burien's tree policies, with the intention of hosting a Planning Commission discussion on the topic on August 12, 2020. On July 9, 2020 Community Development hosted a webinar featuring Ian Gray, Renton's staff arborist, to discuss urban tree canopy policies and programs. On July 8, 2020 the Planning Commission discussed the Green Burien Partnership Urban Forest Stewardship Plan with a great presentation by Ali Yeates Lakehart of Forterra. The Stewardship Plan was undertaken in partnership with PaRCS staff. Council can expect to hear from Community Development and PaRCS staff about the final Stewardship Plan at a meeting in September.

Housing Demonstration Project:

We are working with Burien's first Housing Demonstration Project, proposed by Habitat for Humanity. An initial neighborhood meeting has been scheduled by the applicant for late August. The project is tentatively scheduled to go before the Planning Commission in October, and City Council in November.

Permit System Kick-Off:

Staff from Finance, Public Works, Community Development, IT, Administrative Services, Fire and others participated in 16 hours of workshops to discuss our current permitting processes and our needs relative to a future online permitting system. The workshops confirmed how greatly Burien needs integrated permitting software to help us coordinate our work and serve customers. The workshops also highlighted the commitment and innovation by staff across all departments under our current system. Thank you to IS Manager Fernando Llamas for coordinating the workshops and keeping the project moving forward. Kudos to all participants for their energy and insights.

E. PaRCS Update

Arts-A-Glow-ing 2020

Staff and glow artists are working to develop a COVID-19 safe version of the Arts-A-Glow event. Arts-A-Glow-ing will take place during the month of September. The event may contain virtual lantern making tips and tricks, home decorating contests, pop-up projection mapping art around the city, a possible art installation up for a month or more at Dottie Harper Park, and possible art installations in storefront windows. Information coming soon:

https://www.burienwa.gov/residents/parks_recreation_cultural_services/virtual_events

or follow us on Facebook <https://www.facebook.com/burienparks/>

Recreation Programs Update

- a. **Summer Camp 2020** The City will host a modified 4-week summer camp starting Monday, August 3, 2020 for grades 1st through 5th. Currently we have 11 participants signed up for the first week. Campers will experience art, science, dance, games, enrichment, and play. Our camp will cover a fun mix of activities for everyone! Health and safety procedures have been put in place and social distancing guidelines will be followed to ensure a safe camp experience. This program will be held at Burien Community Center. 87% scholarships are provided for those who need assistance with the weekly camp fee. For more information on how to apply for a scholarship on how to register visit

https://www.burienwa.gov/residents/parks_recreation_cultural_services/summer_camp

- b. **Skyhawks Summer Sports & Tennis Camps** Beginning August 3, 2020 Skyhawks will offer two sport skills camps for pre-school and youth participants at Lake Burien School Park. Skyhawk multi-sport programs are tailored to the child's age and skill level while teaching life lessons such as respect and teamwork. Children will learn the rules and essential skills of each sport (soccer, baseball, & flag football).

Beginning August 10, 2020, we will be having a Skyhawk Tennis Camp. Skyhawks tennis programs are tailored to the child's age and skill level while teaching life lessons such as respect and teamwork. Children will learn the rules and essential skills of tennis.

Health and safety procedures have been put in place by the camp organizers and social distancing guidelines will be followed to ensure a safe camp experience.

- c. **Great Burien Baking Challenge—Summer Edition** The bakers are at it again with more amazing bakes! In July PaRCS staff rolled out another edition of the baking challenge with challenges being summer berries and bread sculpture. Winners were Sarah Moore with her amazing bread ant made from Japanese Milk Bread and Russian Black Bread, and Alex Kloehn with his Summer Berry Honey Eton Mess Cake. As participation is good for this event, staff will be hosting a monthly bake challenge for the rest of the year with monthly seasonal flavors as the focus. Look for information coming soon at



https://www.burienwa.gov/residents/parks_recreation_cultural_services/virtual_events or follow us on Facebook <https://www.facebook.com/burienparks/>

- d. **Mystery Challenge, the Case of the Elusive Unicorns** Staff will be rolling out a scavenger hunt for the community on August 4th. Families will be encouraged to walk the 2-mile trail through downtown Burien to solve silly riddles and find the unicorns. This event will take place August 4th -17th. Look for information coming soon at https://www.burienwa.gov/residents/parks_recreation_cultural_services/virtual_events or follow us on Facebook <https://www.facebook.com/burienparks/>

Annex Demolition – Contract Award & Public Communication (Page 12)

The City provided a notice of award to Construction Group International (CGI) LLC to demolish the Annex. The selection process entailed competitive bidding and CGI's low bid was \$345,400. The City and CGI are undergoing contract negotiations and are planning a pre-construction meeting the first week of August, where the initial project schedule will be shared.

On July 27, a construction fence was installed by the City around the Annex in preparation for the demolition work. However, the Annex remains open to the tenants until July 31 and the park remains open to the public until construction begins. Access to the site is via the eastern driveway to the parking lot.

A letter to residents and businesses within 500 feet of the Annex was mailed on July 27 as well, a copy is attached for Council's reference. Staff will update Council as the project progresses.

Annex Demolition – Request to Amend Budget

The original annex demolition budget shared with City Council was \$350,000, which included \$300,000 to \$325,000 for construction, and the remainder of funds for contingency and some city costs for utility disconnection fees, signage, and other items. The low bidder's cost estimate was \$345,000, which includes a \$15,000 force account, leaving \$5,000 for contingency and city costs. Therefore, *staff will seek City Council's approval at the August 17, 2020 meeting to amend the project budget to allow for a 20 percent contingency.* This contingency would combine the force account, the \$5,000 remaining in the budget and an additional \$40,000. The additional contingency funds would be moved from capital project PG0002, Parks Facilities Restoration. These funds will only be used if necessary and approved by the Parks Project Manager and PaRCS Director. Without a contingency, the City may need to halt the project to seek Council budget authority.

BCC Restrooms and HVAC

Rolluda Architects is well underway with the design of two projects for the Burien Community Center including designing a new HVAC system for part of the buildings and updating the restrooms to include a single use family style ADA compliant restroom.

Rolluda began ADA restroom layout options for consideration. Space allocations appear they will accommodate a single-family style restroom with only slight modifications to adjoining spaces. Each of the restrooms will receive an update to finishes such as partitions, sinks and lavatories. The HVAC design is also underway. This system may require some modifications to closet and storage rooms to provide space for the new equipment.

Rolluda Architects indicate that pending unforeseen circumstances or interruptions with COVID-19 that 90% design plans may be complete as early as October 2020 with construction bidding proceeding shortly after.

Lake Burien Playground and Pathway Project Update

The City is finalizing a contract with the selected design consultant, The Berger Partnership. The firm will design, engineer, and provide construction management for playground and barrier-free pathway improvements. A kick-off meeting is scheduled for the week of August 10.

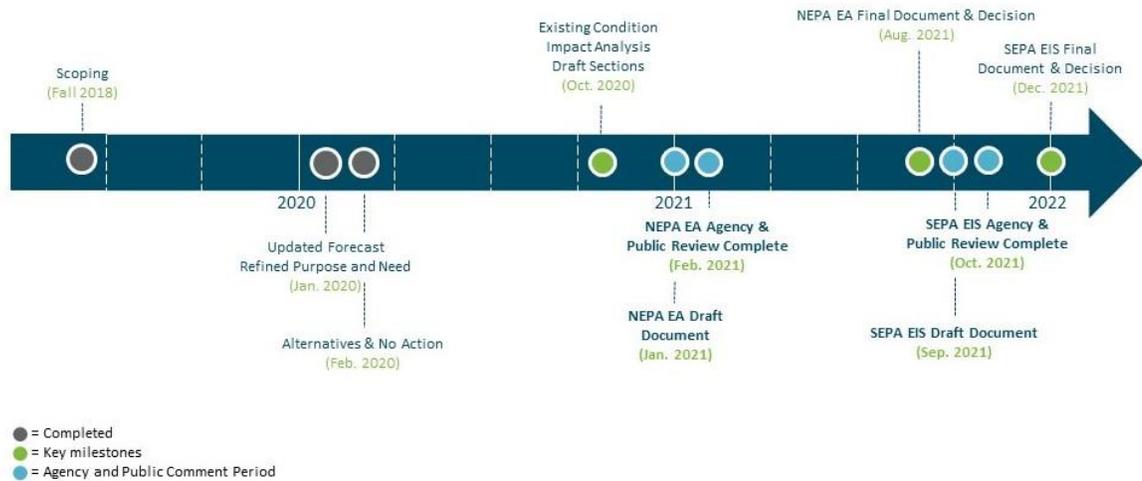
F. West Seattle Marketing Efforts

The City of Burien has executed a contract with the Seattle Southside Chamber of Commerce to conduct a social media advertising campaign geo-targeted to West Seattle. The campaign will include short videos sharing the opportunities to visit, shop, access services, and dine in Burien. Travel habits and patterns of West Seattle residents may be changing during the unfortunate West Seattle Bridge closures and this campaign message will focus on the benefits of accessing goods and services in Burien that they may have accessed in other areas. The content creation is currently underway, and the project is utilizing Port of Seattle Economic Development grant dollars for funding.

G. SAMP Near-Term Project Environmental Review Schedule Update

The schedule for the Sustainable Airport Master Plan (SAMP) Near-Term Projects (NTP) environmental review is delayed as a result of the COVID-19 pandemic. The delay will provide the

ability to host effective and safe public meetings and includes a partial deferral of spending in 2020. The release of the first environmental review analysis, the draft NEPA Environmental Assessment (EA), and the accompanying public outreach, will now occur in the first quarter of 2021. The Port continues to refine the detailed schedule.



The master plan is intended to provide for the future of Seattle-Tacoma International Airport (SEA). The Port continues work to complete the environmental review of the SAMP NTP. Once the environmental review is complete, which is expected in 2021, Commission authorization is required to initiate any individual project.

H. Volunteers Needed for King County Conservation Futures Advisory Board

The King County Conservation Futures Advisory Committee is recruiting for two open positions. The King County Conservation Futures Advisory Committee is a volunteer advisory board serving King County government. Each year, governmental agencies and qualified nonprofits can apply for King County Conservation Futures tax levy (CFT) funds to purchase or preserve open space lands, including natural areas, passive recreation parks, urban greenspaces, trails, community gardens, farms, and forests in unincorporated King County and its cities. The Committee reviews applications for CFT funds and recommends the allocation of CFT funds to the King County Executive and Council which makes the final funding awards. More information is available on this website: www.kingcounty.gov/CFT.

I. Update on Efforts to Secure a Complete Count in the US Census

At this moment, 68.3% of our community, representing 14,890 households, has self-responded to the census, surpassing our 2010 self-response rate. However, we still have several census tracts in the north end of our city who have responded at a lower rate.

The City has implemented a multilingual social media campaign focused on the laws protecting the privacy and confidentiality of the information collected via the census, reminding people that there is no citizenship question, and that a person’s census information cannot be shared with law enforcement agencies, ICE, your employer, or landlord.

Staff are supporting the work of community organizations. There are many community organizations who have continued to work hard to urge people to take the census, despite barriers to outreach the pandemic has caused. This month, our staff passed out several hundred flyers about the census during our mask giveaway events. Last week, during the July 30 mask giveaway event, representatives from the **U.S. Census Bureau** and Para los Niños were with us to encourage people to take the census.

Census takers (enumerators) will begin nonresponse follow-up work this week to last through October, visiting households who have yet to self-respond. A count of people experiencing homelessness outdoors or in transitory locations will begin next month. We have notified our local law enforcement in case they get calls from residents about enumerators. We also encourage property managers to allow census enumerators on their property. They have a legal right to be there.

President Trump issued a memo on July 21, 2020 stating that individuals who were undocumented would be removed from the final count. This is unconstitutional and is being challenged in court. Several states, counties, and cities, including Washington State and City of Seattle, have joined the lawsuit. We want to communicate to our community that it is everyone's right to be counted in the census, regardless of your citizenship status. The U.S. Constitution's enumeration clause (Article I, sec. 2, as amended by the 14th Amendment) is clear: congressional apportionment must be based on a count of all persons living in the U.S. The Justice Department under both Republican and Democratic administrations have repeatedly confirmed that the Constitution requires an apportionment based on the number of persons living in each state, without regard to citizenship or immigration status. There is no hidden meaning behind the constitutional phrasing: "persons" means persons.

The US Census Bureau is also recommending that Congress extend the statutory reporting deadline (December 31, 2020) for apportionment and redistricting in the next COVID-19 relief bill and allocate \$400 million to address continued 2020 Census challenges brought about by the coronavirus pandemic. This is contrary to a relief package supported by The White House and OMB that would allocate money to a more rushed door-knocking operation (NRFU). The Census Bureau is asking that operations must continue in a manner that facilitates a fair and accurate count, without cutting corners that inevitably will lead to a significant undercount. If the Census Bureau doesn't have the time it needs for a thorough enumeration of households that didn't respond on their own, people experiencing homelessness, and people who live in transitory locations such as RV parks, the historic undercount of harder-to-reach populations — including rural communities, low-income households, people of color, American Indians living on tribal lands, immigrants, and young children — will get worse. There is concern from career Census Bureau staff that rushing forward with hastily developed new plans will result in incomplete data that will undermine the ability of Congress and state leaders to allocate trillions of dollars in resources for vital services and infrastructure improvements wisely and effectively in the coming years. A poorly executed census would hurt a diverse range of rural and urban communities, leaving them underrepresented in Congress and cutting their federal funding for Medicaid, economic development, childcare, schools, road and public transit improvements, home heating assistance for senior citizens, and many more vital services.

II. COUNCIL REVIEW/ACTION REQUESTED

A. Follow-Up from July 20, 2020 City Council Regular Business Meeting

At the last Regular Business Meeting, there were a number of directions/suggestions provided to staff toward the end of the meeting. However, after further review, it was recognized that none of the recommendations were given the three Councilmember 'thumbs-up' support required. The direction provided is as follows:

- a. **CM Tosta:** Add the Climate Action Plan to a September Agenda.
- b. **CM Tosta:** Discuss the "temporary community taskforce" (item f on the planning calendar) at a meeting sooner rather than later.
- c. **DM Marx:** Reinstate the August Study Session to discuss COVID-19 specific topics.
- d. **CM Aragon:** Provide an educational session for homeowners regarding mortgage relief.

Does Council support these items? If so, where should we place them on the planning calendar?

III. COUNCIL UPDATES/REPORTS

A. July 2020 Federal Legislative Update [\(Page 13\)](#)

Attached is the federal legislative update for July 2020 as submitted by Federal Liaison Mike Doubleday. Also attached:

- US Senate HEALS Act Summary
- Solving the Climate Crisis Information Flyer
- Letter to Representative Jayapal on Howard Hanson Dam dated 7/16/20
- Federal Interagency Committee on Aviation Noise (FICAN) Research Review of selected Aviation Noise Issues



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July 14, 2020

Faye Landskov
Grants & Contracts Unit
Seattle Police Department
610 Fifth Avenue
Seattle, WA 98124-4986

Subject: Burien Decline of FY2020 JAG Local Formula Grant funds.

Dear Ms. Landskov:

The City of Burien is declining its share of the FY2020 federal Edward Byrne Memorial Justice Assistance Grant (JAG) Local Formula grant. The City of Seattle may reallocate the approximate \$19,000 share that was allocated to Burien for this grant.

If you have any questions, please contact Lori Fleming, Management Analyst at Lorif@burienwa.gov or at 206-248-5518.

Sincerely,


Brian J. Wilson
City Manager

Date: 7/14/2020

Brian J. Wilson
City Manager



King County

District Court

Office of the Presiding Judge

W1034 King County Courthouse

516 Third Avenue

Seattle, Washington 98104

Telephone: (206) 477-1720

Fax: (206) 296-0596

The Honorable Susan Mahoney
Chief Presiding Judge

Othniel Palomino
Chief Administrative Officer

June 21, 2020

Brian Wilson
Burien City Manager
400 SW 152nd St, Suite 300
Burien, WA 98166

Dear Burien City Partners,

Thank you for taking the time to meet with us regarding the Burien Community Court Program. As you know, community court is financed entirely with MIDD funding, which has been severely impacted by the loss of sales tax revenue due to the COVID-19 pandemic.

All Superior, Juvenile and District Court therapeutic courts in King County are facing the same difficult budget cuts and decisions. Other county programs funded by MIDD are also being cut or eliminated. The loss of public health, treatment, housing, and other services funded by MIDD is far reaching and devastating. The county's general fund is also facing a significant shortfall due to the economic downturn. The county has let us know that it is unlikely that there will be any other funding source available to cover the MIDD losses in the 2021-22 budget.

The significant and immediate loss of funds to this year's budget and the cuts we still face, have necessitated staff and other budget reductions at King County District Court. These reductions leave us unable to continue all of our community court programs.

It is with great regret that we must temporarily suspend Community Court in Burien until such time as we are able to secure adequate funding to reopen. We anticipate that this suspension will be for at least one year, or longer, depending on the region's pace of economic recovery.

We will continue to work with the small number of Burien Community Court participants to give them the opportunity to successfully complete their Community Court Agreement, while being monitored in our regular court setting. Until Community Court in Burien can resume, we will continue to accept and encourage diversion opportunities and to seek alternatives to incarceration whenever possible and appropriate. We will also continue to update our resource network information and share it with Burien staff and Burien Court defendants.

King County District Court remains committed to Community Court for Burien. As we discussed in our meeting, the Burien program has struggled to gain footing from the beginning. Despite great efforts and countless hours of extra staff time, we have never seen the enrollment levels we believe are possible, or the level of community use of the resource center that we have experienced in other locations. We touched on some of the suspected reasons in our meeting, but we need to continue these discussions with the entire Burien stakeholder group while we are on hiatus so we can learn from the lessons the program has taught us. We look forward to continuing to work with you toward the future re-opening of Burien Community Court as the strong community resource we all want it to be.

Sincerely,

Susan Mahoney



Chief Presiding Judge
King County District Court
(206) 477-2040

Cc: Lori Fleming
Colleen Brandt-Schluter
Othniel Palomino



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July 27, 2020

RE: Burien Community Center Annex Demolition

Dear Neighbors:

The City of Burien will be demolishing the Burien Community Center Annex, located at 425 SW 144th Street. This month, the City is finalizing the contract for this work. Once that process is complete, the City will have a more detailed schedule with general activities listed to share with the community. This project will begin in August and is expected to be completed in September or October.

The site will be secured with a chain link fence beginning in late July or the first week of August to protect the public from construction activities and to secure the site. During construction, the skate park and basketball court will be closed to protect the public from construction activities. The date of closure will be announced soon, pending the contractor's schedule. The fence will remain in place after demolition until the grass matures, which will likely be springtime of 2021. After demolition of the buildings on the north end of the property, the site will be graded and seeded. The south end of the park will remain and not be demolished, and the north end of the park will be an open lawn. Most of the main parking lot will be left in-tact and the garden will not be impacted.

The City will keep the following webpage up to date with demolition and site restoration news. burienwa.gov/annexdemolition. The Burien City Council decided to close and demolish the building after learning from a Facilities Condition Assessment that the building has several life safety concerns and is in critical condition, meaning the ratio between the cost to maintain and repair the building to the current replacement value of the facility is high. For more information about why this building is being closed and demolished, please refer to this webpage: burienwa.gov/annex.

It is possible that the Community Center Annex Park could be further developed in the future for some enhanced park use, recreation building, or similar facility. The City will engage the community in conversations about those possibilities in the future.

If you have any questions about this project, please contact me at carolynh@burienwa.gov or 206.391.1646.

Sincerely,

Carolyn Hope
Parks, Recreation and Cultural Services Director

TO: Brian Wilson, City Manager, Burien

FM: Mike Doubleday, Federal Relations

RE: **July 2020 Federal Update**

The Senate was in recess most of July, returning to the Capitol on July 20. The House was working most of the month, some remotely, beginning to pass FY 2021 budgets out of committee.

The House passed their next coronavirus relief package, the HEROES Act, on May 15. The Senate did not respond to that legislation. On July 27, the Senate Republicans released their next coronavirus relief package, the HEALS Act, which was about \$2 trillion less than the HEROES Act. The HEALS Act contains no new money for cities.

The US Conference of Mayors released a statement saying it is unacceptable to leave cities behind in a new coronavirus package. The National League of Cities said “The draft coronavirus relief package released today is out of touch with the grim reality facing communities large and small across the nation, which local leaders of both parties have highlighted over the past several months.”

Congress is facing an August 7 deadline to pass another coronavirus bill as the original Congressional calendar has Congress adjourning August 7 until September 8.

I’ve summarized the HEALS Act at the end of this report, from news accounts, and **attached** a short summary from the National Association of Towns and Townships.

1. FAA Aircraft Noise Metric Study

I reported last month that the FAA has sent to Congress its' report on sections 173 and 188, the mandated studies in the 2018 FAA Reauthorization Act – the evaluation of alternative noise metrics to the current average day-night noise level standards around airports.

I have read through the report several times, and although I find it difficult to understand, it strikes me that maybe the wrong question was asked. The report concluded the currently-used DNL metric is the correct one and it did consider some other metrics, but then it referenced the 2018 Federal Interagency Committee on Aviation Noise (**FICAN**), April 2018 report – which is **attached**.

Here's what I wrote to Amanda in Rep. Smith's office about the FICAN report:

“The FICAN report is interesting. It basically says more research is needed into the findings from the 1992 FICAN report, especially sleep disturbance and non-auditory health effects. Instead of [Congress] asking [the FAA] for alternative metrics, the question might be something like...“has the latest research turned up new methods for mitigating noise effects around airports, or can we define what needs to be further researched to mitigate noise effects around airports” (and then select people to do the further research, and fund it).

The FAA report isn't bad, but I think it repeats information that is generally already known.”

I recommend sending the 2018 FICAN report to the Airport Committee; if members aren't acquainted with it yet, it's worth reading. It appears to get much closer to solutions than the FAA report just issued – or at least it asks the right questions.

2. EPA Aircraft Emissions Rule Issued

On July 22, the EPA proposed new regulations to reduce greenhouse gas emissions (GHG) from air travel. The proposal adopts a 2017 emissions standard from the International Civil Aviation Organization (ICAO), the United Nations' aviation authority, which aimed to reduce greenhouse gas emissions from new aircraft by 4 percent over 12 years.

Critics and even EPA said the standards would do little to improve emissions as they mirror advancements the industry is already making.

Quoting from “The Hill” article announcing the proposal:

“EPA is not projecting emission reductions associated with today’s proposed GHG regulations,” the EPA wrote in the proposal. “This proposal today is really based upon the technology and where this technology is today.”

“Those comments angered environmental groups, including the Center for Biological Diversity, which previously threatened to sue the agency if it did not set standards as required by an earlier ruling under the Obama administration.”

“They are literally just anti-backsliding provisions. They don't require anyone to improve, they just say, ‘When doing stuff don't make it worse,’” Clare Lakewood, climate legal director for the center, said of the standards, which she described as “technology following rather than technology forcing.”

3. Surface Transportation Reauthorization bill

On July 1, the House passed the **Moving Forward bill, H.R. 2**, which is the reauthorization of the Fixing America's Surface Transportation (FAST) Act, the Surface Transportation bill, passed five years ago. This long-term transportation funding bill, a five-year bill, provides certainty for states and local governments to move forward with transportation projects with confidence the federal government will be a funding partner over the long term. The FAST Act expires September 30, 2020.

The massive House bill is over 2700 pages long. A few of the germane provisions to Burien are as follows:

- Rep. Adam Smith amended the bill to add this ultrafine particle language (section 1634). From his press release: "my amendment requires the FAA to coordinate with the National Academy of Sciences and the EPA to conduct a comprehensive national study to fully understand the health effects of ultrafine particles, and to what extent airport communities are exposed. We need answers to understand how UFPs affect communities around airports...and whether sustainable fuels could help reduce the number of these particles in the atmosphere."

The press release goes on to thank local leaders for educating the community about this issue.

- Section 10102, the "Supplemental Funding for Airports" section, allocates \$17.5 billion for commercial service airports (including SeaTac); the funds will be distributed on the airport's passenger enplanements.
- Congresswoman Jayapal added an amendment to the "Supplemental Funding for Airports" section (section 10102) increasing from 4.5% to 5% funds for airport emission reduction projects.

- Rep. Larsen worked on a section entitled “Community Transportation Investment Grant Program” (section 306). The Secretary of USDOT is authorized to make grants to eligible entities, including cities, for eligible project costs, including environmental review, design, and preliminary engineering. Not less than 25% of funds will be awarded to projects in urbanized areas with populations greater than 49,999 and less than 200,001. This population band was sought by Burien and other mid-size cities so as not to compete with larger cities like Seattle.
- The USDOT shall establish a competitive grant program funded at \$200 million for five years (2021-2025) for projects to:
 - Develop, demonstrate, or apply low-emission aviation technologies, or
 - Produce, transport, blend, or store sustainable aviation fuels that would reduce greenhouse gas emissions attributable to the operation of aircraft that have fuel uplift in the U.S. (section 10201)
- \$150 million for five years for the study and development of sustainable aviation fuels (section 10203),
- \$25 million for five years to assess and reduce the environmental impacts of aviation and to improve the health and quality of life of individuals living in and around airport communities (section 10204).

4. Climate

On July 1, the House Select Committee on the Climate Crisis, issued its’ report. The report is over 500 pages; I have **attached** a two-page summary. Quoting from the two-page summary:

The Climate Crisis Action Plan calls for:

- Reaching 100% clean, net zero emissions economy-wide in the U.S. no later than 2050.
- Establishing ambitious interim targets to assess progress and reduce pollution in environmental justice communities.
- Achieving net-negative emissions during the 2nd half of this century.

There is a section in the report on building a “Cleaner and More Resilient Aviation Sector.” (see page 128 of the full report). Quoting from this section:

“The aviation sector accounted for 10% of the U.S. transportation sector’s energy-related carbon dioxide emissions in 2019 and nearly 4% of all energy-related carbon emissions.”

“Full electrification of airline fleets, if technologically feasible, may be decades off. In the nearer term, sustainable alternative fuels that are under development and already in use may hold the most promise for reducing the sector’s consumption of traditional jet fuel, with a continued commitment to research and innovation.”

Among the recommendations in the Aviation section are the following:

- Direct EPA to set science-based greenhouse gas emissions standards for the new and in-service aircraft.
- Significantly increase federally supported research, development, demonstration, and deployment to reduce aviation emissions.
- Provide tax incentives and grant support for low-emission aviation technology and sustainable aviation fuels that reduce greenhouse gas emissions.
- Provide additional credit for sustainable aviation fuels under the renewable fuel standard or a future federal low carbon fuel standard.

- Expand the FAA's grant programs for cleaning up airport ground support equipment.

5. **Great American Outdoors Act, H.R. 1957**

I reported on this bill last month, an important bill to Senator Cantwell. The bill has now passed both houses of Congress and has been sent to the President for his signature.

The bill establishes the National Parks and Public Land Legacy Restoration Fund to support deferred maintenance projects on federal lands.

For FY2021-FY2025, there shall be deposited into the fund an amount equal to 50% of all federal revenues from the development of oil, gas, coal, or alternative or renewable energy on federal lands and waters. Deposited amounts must not exceed \$1.9 billion for any fiscal year.

The fund must be used for priority deferred maintenance projects in specified systems that are administered by

- the National Park Service,
- the Forest Service,
- the U.S. Fish and Wildlife Service,
- the Bureau of Land Management, and
- the Bureau of Indian Education.

6. **Salmon Recovery Funding / Howard Hanson Dam**

As discussed in the last two updates, two positives have occurred recently on the salmon recovery issue on the Green River. The dam sits on the Green, about 21 miles east of Auburn.

- a letter was sent by all 12 Washington federal delegation elected officials (the 2 Senators, and 10 House of Representatives members) to the Corps of Engineers supporting the downstream fish passage facility at the Dam.
- \$3M was included in the Corps FY 2020 budget to redesign the fish passage facility at the Dam and provide a cost update.

On July 16, Tacoma Public Utilities sent a letter to the Washington Congressional delegation thanking them for their work on these two issues. The letter, which the Council agreed to sign onto in June, has twenty-five (25) signators and is **attached**.

7. Senate Republican July Coronavirus Bill

Senate Republicans released their next coronavirus relief package on July 27, called the HEALS Act. According to news summaries, here are some highlights to their bill. I have attached a short summary from the National Association of Towns and Townships.

Please note that there is no new money for states or cities; rather the bill allows greater flexibility in the use of state and city money appropriated in the CARES Act.

- The GOP would set the federal unemployment benefit at \$200 per week on top of what recipients would normally receive from states through September (the current rate is \$600/week). In October, a rate of 70% of a worker's previous wages would take effect up to a maximum of \$500 per week. There is some question whether the 70% rate could be implemented by states in October.
- The proposal would send direct payments of \$1,200 and \$2,400 to individuals and couples, respectively. It would set the same qualifications

as the checks approved in March: \$75,000 in income per person, and \$99,000 for couples filing joint tax returns. It would offer an additional \$500 per dependent of any age.

- The legislation would shield entities such as businesses, doctors, and schools from lawsuits, except for cases of “gross negligence” or “willful misconduct.”
- It would set aside \$190 billion for Paycheck Protection Program loans. The bill would allow small businesses with fewer than 300 employees that have seen revenue fall by more than 50% to apply for a second round of aid. It would also authorize \$100 billion for loans to seasonal businesses and companies in low-income census tracts that can show revenue reduction of more than 50%.
- The bill provides \$105 billion to help schools reopen in the fall. Roughly \$30 billion of that amount would go to colleges. Most of the money would go to schools physically reopening to help them with the costs associated with safely restarting.
- It includes \$16 billion to help states boost Covid-19 testing capacity, and puts \$26 billion toward the development of Covid-19 vaccines and therapeutics.
- The plan includes 100% deductability of business meals.
- The bill also authorizes an unrelated \$1.75 billion for construction of a new FBI headquarters building in downtown Washington D.C., a short walk from President Donald Trump’s hotel. According to numerous reports, his company worried plans to demolish the FBI’s current home, the J. Edgar Hoover Building, and move headquarters to the suburbs could allow a competitor hotel to move downtown.

U.S. Senate HEALS Act Summary

Yesterday afternoon Senate Republicans began releasing their version of the next coronavirus relief package reportedly totaling approximately \$1 trillion. The package is a series of bills:

- Safe to Work Act
- Restoring Critical Supply Chains & Intellectual Property Act
- Safely Back to School and Back to Work Act
- American Workers, Families, and Employers Assistance Act
- Continuing Small Business Recovery and Paycheck Protection Program Act
- TRUST Act of 2020
- Supporting Americas Restaurant Workers Act
- Coronavirus Response Additional Supplemental Appropriations Bill (totaling over \$306 billion. The relief funding relevant to local and regional government, including relief for business, is outlined below)



There is no additional state and local aid similar to the CARES Act's Coronavirus Relief Fund (CRF). There are additional flexibilities with the CRF – but they are limited.

- The deadline to spend CRF is extended to 90 days after the local government's fiscal year 2021.
- Recipients can use CRF to cover revenue shortfalls if the government certifies it has distributed at least 25% of CRF funds to downstream governments; and a government can use no more than 25% of its allocation to cover revenue shortfalls.
- Revenue shortfalls eligible for recovery are those experienced from March 1, 2020 to 90 days after the last day of the government's FY 2021.
- CRF cannot be used to replenish rainy day funds and cannot be used for pensions or postemployment benefits.

Other provisions:

- Individual unemployment insurance reduced from \$600 to \$200/week.
- \$1,200 direct payments at individual incomes of \$75,000 or less a year, with \$500 in benefits for each child or adult dependent. (The bill passed by House Democrats two months ago also includes \$1,200 stimulus payments, but has \$1,200 benefits per child, up to a total of \$6,000 per household.)
- \$105 billion in education funding, with \$70 billion going to elementary, middle and high schools; \$29 billion for colleges and universities and \$5 billion to a flexible fund. Two-thirds of the money would go to schools that institute reopening plans and the rest to schools generally, under existing federal formulas. The White House wants to tie school aid to reopening plans, but Democrats are opposed. Democrats are demanding \$430 billion for schools.
- Allows student borrowers to delay loan repayments and then cap loan payments at 10% of income minus housing costs.
- Employer liability protections: businesses, schools, charities and other organizations are protected from COVID-19-related lawsuits through Oct. 1, 2024, as long as they make "reasonable" efforts to follow public health guidelines and don't commit acts of "gross negligence" or "intentional misconduct."
- Extends the Paycheck Protection Program adding \$60 billion to a facility that still has \$130 billion left from the last stimulus. Small businesses with fewer than 300 employees that can show revenue losses of 50% or more since the pandemic began would be able to apply for second PPP loans.
- \$16 billion to help states ramp up tests and contact tracing.

- Tax credits for the increased costs that businesses are facing to shield workers and customers against the virus. It includes a credit to cover some of what companies spend on testing, personal protective equipment, workplace cleaning and retrofitting facilities to adhere to distancing guidelines.

Agriculture

Rental Assistance Program – \$113.4 million. The proposal provides Rental Assistance (RA) to all currently assisted wage earning residents if they lost all wages and were unable to pay rent.

Commerce

Assistance To Fishery Participants – \$500 million. The bill provides \$500 million to direct financial assistance to all manner of fishers, fishery participants, and communities that have been affected by the coronavirus.

Defense

Coronavirus Defense Production Act Purchases – \$5,300,000,000. The proposal supports Defense Industrial Base capacity and throughput initiatives that support the workforce, operations, facilities and equipment of critical industrial partners and fragile small business providers essential to national defense who are at risk due to COVID-19 impacts.

Homeland Security

FEMA – \$930 million. The proposal provides \$930 million for emergency grant programs, including \$365,000,000 for Assistance to Firefighter Grants, \$365,000,000 for Staffing for Adequate Fire and Emergency Response Grants, and \$200,000,000 for the Emergency Food and Shelter Program.

Interior, Environment

Indian Health Services – \$605 million. The proposal provides funding to support critical health care needs and operations in Indian Country, including through Indian Health Service, Tribal, and Urban Indian health programs.

Indian Health Facilities – \$1 billion. The proposal provides funding to assist with sanitation, isolation or quarantine space, and other medical equipment needs related to the coronavirus in Indian Country.

Labor

Dislocated Worker Grants – \$500 million. The proposal provides \$500 million specifically for employment and training activities, including individual training accounts, incumbent worker training, transitional jobs, customized training, and on-the-job training.

WIOA State Grants – \$450 million. The proposal provides \$450 million for adult, youth, and dislocated state grants for states and communities to respond to the workforce impacts and layoffs resulting from the coronavirus.

State Unemployment Insurance and Employment Service Operations – \$1.15 billion. The proposal provides \$1.15 billion for states to process unemployment claims and make needed IT upgrades to their unemployment systems.

Employment Service – \$350 million. The proposal provides \$350 million for reemployment services, job search assistance, placement assistance for job seekers, and services offered to employers such as referral of job seekers and special recruitment services.

Health & Human Services

Centers for Disease Control and Prevention – \$3.4 billion. The proposal provides \$3.4 billion to CDC, including \$1.5 billion to continue supporting state, local, and territorial public health needs; \$500 million to enhance seasonal influenza vaccination efforts; \$200 million to enhance global public health security efforts; and \$200 million to modernize public health data reporting.

Substance Abuse and Mental Health Services Administration – \$4.5 billion. The proposal provides \$4.5 billion including:

- Mental Health Services Block Grant: \$2 billion, of which, no less than 50 percent of funds shall be directed to behavioral health providers
- Substance Abuse and Prevention Treatment Block Grant: \$1.5 billion
- Certified Community Behavioral Health Clinics: \$600 million
- Suicide Prevent Programs: \$50 million
- Project AWARE: \$100 million to support mental health once children return to school
- Emergency Grants to States: \$250 million for flexible emergency grants to states

Centers for Medicare and Medicaid Services – \$150 million. The proposal includes \$150 million for CMS to increase survey frequency of skilled nursing facilities and nursing facilities.

Administration for Children and Families – \$16.7 billion. The proposal provides \$16.7 billion, including:

- Low Income Home Energy Assistance Program: \$1.5 billion to help low income households pay home heating and cooling bills.
- Child Care and Development Block Grant: \$5 billion for child care, including direct support for child care providers to help ensure working parents have access to child care so they can work or return to work.
- Back to Work Child Care Grants: \$10 billion
- Children and Families Services Programs: \$190 million for family violence prevention and child welfare programs, to support services for particularly vulnerable families and populations.

Administration for Community Living – \$75 million. The proposal provides \$75 million for services targeted to older Americans and the disability community, including caregiver support, protection and advocacy, and home and community based support services.

Public Health and Social Services Emergency Fund – \$78.1 billion. The proposal provides \$78.1 billion, including:

- Provider Relief Fund : \$25 billion
- Testing: \$16 billion for testing, contact tracing, and surveillance in states (as mentioned above). This new funding, when combined with approximately \$9 billion that remains unallocated from the Paycheck Protection Program and Health Care Enhancement Act, would make \$25 billion available for these purposes.
- BARDA: \$20 billion for vaccine, therapeutic, and diagnostic development
- Vaccine Distribution: \$6 billion to develop and execute a new COVID-19 vaccination distribution campaign coordinated through CDC
- Strategic National Stockpile: \$2 billion
- Community Health Centers: \$7.6 billion
- Children's Hospital Graduate Medical Education: \$250 million
- Rural Health Clinics: \$225 million
- Poison Control Centers: \$5 million
- Direct Workers Training: \$5 million

Education

Education Stabilization Fund – \$105 billion. The proposal provides \$105 billion to help get students back to school and provide for the continued learning of all students in elementary and secondary education and higher education.

Authorizes assistance to non-public schools.

Provides for the continued payment of school employees.

Requires states to maintain their funding for education at least at the same proportional levels as in 2019 as a condition for receiving Education Stabilization Fund grants.

Corporation for Public Broadcasting – \$175 million. The proposal provides \$175 million for stabilization grants to maintain programming services and to preserve small and rural public telecommunication stations.

Transportation

Airport Improvement Program (AIP) – \$10 billion. The proposal provides \$10 billion to FAA's AIP to maintain operations at our nation's airports that are facing a record drop in passengers. Funding will be distributed by statutory entitlement and enplanements formulas and may be used for operating expenses and debt service. Funding is also set aside to maintain Contract Tower operations.

Extends the obligation period for 2018 BUILD grant funding through September 30, 2021.

Housing & Urban Development

Tenant-Based Rental Assistance – \$2.2 billion. The proposal provides \$2.2 billion to maintain current Section 8 voucher rental assistance for low-income families who are experiencing a loss of income from the coronavirus. Without this funding, Public Housing Agencies (PHAs) will have to implement shortfall prevention measures, including reducing or terminating rental assistance for voucher holders. These actions would impact seniors and the disabled who represent 54 percent of all voucher holders.

Public Housing Operating Fund – \$1 billion. The proposal provides \$1 billion for assistance to Public Housing Agencies to maintain their public housing programs and help contain the spread of coronavirus in public housing properties. This funding supplements coronavirus-related reduced tenant rent payments.

Directs HUD to renew all projects with existing grants expiring during calendar year 2021 funded through the Continuum of Care program.

Appropriations Committee plan is [here](#)

Finance Committee plan is [here](#)

SOLVING THE CLIMATE CRISIS

The Congressional Action Plan for a Clean Energy Economy and a Healthy, Resilient, and Just America

WHAT?

Solving the Climate Crisis: The Congressional Action Plan for a Clean Energy Economy and a Healthy, Resilient, and Just America provides a roadmap for Congress to build a prosperous, clean energy economy that values workers, advances environmental justice, and is prepared to meet the challenges of the climate crisis.

BY WHEN?

The Climate Crisis Action Plan calls for:

- Reaching 100% clean, net zero emissions economy-wide in the U.S. by no later than 2050.
- Establishing ambitious interim targets to assess progress and reduce pollution in environmental justice (EJ) communities.
- Achieving net-negative emissions during the 2nd half of the century.

HOW?

The Climate Crisis Action Plan is a comprehensive set of policy recommendations for congressional action to satisfy the scientific and moral imperatives to reduce carbon pollution as quickly and aggressively as possible, make communities more resilient to the impacts of climate change, and build a durable and equitable clean energy economy.

According to an independent analysis by the non-partisan think tank Energy Innovation, the Climate Crisis Action Plan would, at minimum:

- Reach net-zero *carbon dioxide emissions* before 2050.
- Reduce net U.S. *greenhouse gas emissions* by at least 37% below 2010 levels in 2030 and 88% below 2010 levels in 2050.
- Avoid 62,000 premature deaths *annually* by 2050.
- Provide nearly \$8 trillion in cumulative climate and health benefits through 2050.

The Climate Crisis Action Plan calls on Congress to:

Grow Our Economy and Put Americans Back to Work in Clean Energy Jobs

- Support rapid deployment of wind, solar, energy efficiency, and other zero-carbon energy sources and construction of new transmission infrastructure to deliver clean energy to homes.
- Incentivize more domestic manufacturing of clean energy, clean vehicle, and zero-emission technologies along the whole supply chain and support retooling and construction of manufacturing and industrial facilities.
- Launch new economic sectors to meet our climate goals, such as direct air capture and low-carbon building materials.
- Ensure new jobs in the clean energy economy are high-quality, good-paying jobs by strengthening workers' rights to organize a union and ensuring federal spending only supports projects that meet high-road labor standards.

Protect the Health of All Families

- Prioritize EJ communities for clean infrastructure investment, enforcement of environmental laws to address the cumulative health impacts of pollution exposure and near port and industrial areas.
- Develop a national strategic plan to help communities prepare for and respond to climate-related health risks and disasters, including frontline communities and vulnerable populations that are disproportionately harmed by extreme weather, pollution, food insecurity, and other effects of climate change.
- Prepare for the physical and mental health effects of the climate crisis by ensuring hospitals can withstand climate impacts; securing supply chains for medicine and equipment; and helping state and local governments develop response plans.
- Protect the health of workers by improving and shoring up services for coal miners with black lung disease and setting strong standards for farmworkers, construction workers, and others who have to endure severe heatwaves.

Make Sure Our Communities and Farmers Can Withstand the Impacts of Climate Change

- Launch a National Climate Adaptation Program and support state, local, tribal, and territorial governments to ensure homes, businesses, and critical infrastructure can withstand the impacts of climate change.
- Strengthen standards for federally funded projects and building codes so that housing and infrastructure are built to last.
- Accelerate resilient recovery when disasters strike by expediting disaster relief payments and ensuring any post-disaster rebuilding meets climate-informed standards against flood, wind, and wildfire threats.
- Help farmers and ranchers implement soil health practices that make their lands more resilient to the impacts of climate change, such as extreme rainfall and drought.

Protect America's Land and Waters for the Next Generation

- Protect at least 30% of all U.S. lands and ocean areas by 2030, prioritizing areas with high ecological, biodiversity, and carbon sequestration value.
- Limit new leasing for fossil fuel extraction on public lands onshore and offshore.
- Protect and restore ocean and wetland ecosystems, forests, and grasslands to sequester carbon and improve nature's resilience to climate impacts, including wildfire and coastal flooding.
- Create jobs through conservation and reclamation by reestablishing the Civilian Conservation Corps, creating a Climate Resilience Service Corps, and restoring abandoned coal mines and oil and gas wells.

Turning this plan into reality will build a safer, healthier, and fairer America, restore our global climate leadership, enhance our national security, and provide a livable climate for today's youth and future generations.

#SolvingTheClimateCrisis

RESEARCH REVIEW OF SELECTED AVIATION NOISE ISSUES

BY

FEDERAL INTERAGENCY COMMITTEE ON
AVIATION NOISE

April 2018

Prepared by:

FICAN
FEDERAL INTERAGENCY COMMITTEE ON AVIATION NOISE

EXECUTIVE SUMMARY

The 1992 FICON Report, *Federal Agency Review of Selected Airport Noise Analysis Issues*, provided a comprehensive review of selected airport noise analysis issues, and included policy guidance that still remains in effect. Since 1992, research has been conducted to inform several of the issues discussed in the FICON Report. In addition, other issues have been raised and research conducted. Finally, several issues still remain unresolved, and have clear research needs.

This report serves the following purposes: (1) updating FICON findings to reflect research that has been conducted since the FICON Report was published; (2) summarizing additional findings concerning aviation noise issues that were not addressed by FICON; and (3) identifying those aviation noise research issues that warrant additional research and focus. The report focuses on those areas where there has been *change in understanding* or *new research that has led to different findings*. FICON findings on technical issues that have not been addressed in this report remain unchanged; thus, readers should view this document as a supplement to the FICON Report, not a replacement for it. Further, this FICAN review is limited to discussion of technical findings. FICAN has not attempted to undertake any policy analyses based on those findings; that is left to the discretion of FICAN member agencies.

Since publication of the FICON Report, a great deal of research has been conducted on the effects of noise, though not all of it has focused on transportation noise. While it is possible to generalize conclusions concerning the effects of surface transportation noise, the character of aviation noise can be quite different from highway noise (i.e., higher maximum levels, more time between events) and rail noise (different frequency content); thus, some caution should be taken in extrapolating conclusions from those results.

Regarding original FICON conclusions, FICAN has reviewed the findings of the 1992 FICON Report, and makes the following updated findings and recommendations:

- Sleep disturbance: FICAN recommends that environmental impact analyses that address sleep disturbance utilize ANSI S12.9-2008¹, *Quantities and Procedures for Description and Measurement of Environmental Sound — Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes*. As this guidance was developed based on data collected in resident's homes, it may underestimate sleep disruption in unfamiliar and outdoor settings.
- Effects of aircraft noise on children's learning: FICAN recommends that analyses addressing noise effects on children's learning include predictions of school-day noise exposure, as measured by 8-hour Leq, until other research suggests a more appropriate metric. FICAN also recommends that acoustic measurements of classroom noise and new classroom acoustic design follow guidelines presented by ANSI S12.60-2002, *Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools*.
- Aircraft noise annoyance: Research conducted since the FICON Report was released indicates that annoyance to aircraft noise is higher than that described by FICON. FICAN will review ISO Standard ISO 1996-1:2003² that was released on March 1, 2016 and results of federal research studies currently underway³. Review and revision of noise impact thresholds that may result from

¹ At the time of this report's publication, The Acoustical Society of America is reviewing the status of ANSI S12.9-2008. Section 2.2.3 below provides additional detail.

² ISO 1996-1:2003 *Acoustics — Description, measurement and assessment of environmental noise: — Part 1: Basic quantities and assessment procedures — Part 2: Determination of sound pressure levels*

³ See ACRP Project 02-35: *Research Methods for Understanding Aircraft Noise Annoyances and Sleep Disturbance* available at <http://nap.edu/22352> and the FAA's National Annoyance Survey undertaken between July 2015 and Fall 2017, an announcement for which can be found at 79 FR 33797, June 12, 2014.

updated annoyance relationships will be left to agency discretion. In addition, FICAN notes that recent research on aircraft noise annoyance has been and will continue to be conducted around civilian airports. Additional research is needed to identify possible differences in annoyance around military aviation facilities.

- Non-auditory health effects: Extensive research has demonstrated that chronic road traffic noise has non-auditory health effects. Due to the lack of studies on the effects of aviation noise on non-auditory health effects, research needs to be conducted to quantify relationships between aircraft noise level (dose) and the health outcome in question (effect).
- Noise model accuracy: FICAN does not believe that noise predictions should be limited to Day-Night Average Sound Level (DNL) 65 dB and higher. While FICAN acknowledges that the accuracy of the modeling tends to decrease as source to receptor propagation distance increases, modern aircraft noise models are able to predict noise exposure with acceptable precision whether above or below DNL 65 dB (under most conditions). Absolute accuracy has not been quantified, but depends on the accuracy of input, internal databases, and user proficiency, rather than on the model itself.

FICAN has identified a number of aviation noise issues that were not addressed in the 1992 FICON Report and merit its attention today:

- Low Frequency Noise: FICAN finds that additional research needs to be conducted before a low frequency noise (LFN) metric and an associated dose-response relationship can be recommended. For airports with low frequency noise concerns, supplemental noise analysis – possibly including vibration measurements – should be considered.
- Effects of noise on wildlife and visitors in parks and wilderness areas: There has been some research on visitor response to aviation noise in parks; standards for predicting response are in development. Research suggests that wildlife is affected by noise, but no dose-response relationships between aviation noise and its effect on wildlife have been established. Regarding cultural resources, there have been a handful of studies on noise, but no conclusive findings; additional research is needed in order to make specific recommendations.

FICAN believes there are a number of key research needs in the areas of: annoyance; non-auditory health effects; sleep disturbance; emerging aviation noise issues related to non-traditional vehicles, including unmanned aerial systems (UAS), helicopters, military fighter jet aircraft and the phenomenon of crackle, commercial space, and civil supersonic aircraft; noise in national parks, wilderness, and other rural areas; and supplemental metrics.

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1 INTRODUCTION

This report provides an update of the status of airport noise issues of concern to federal agencies. It was undertaken as an update to the 1992 *Federal Agency Review of Selected Airport Noise Analysis Issues*⁴ (“the 1992 FICON Report”).

The FICON Report presented a series of conclusions on technical issues in the following categories:

- General Findings
- Public Health and Welfare Findings
- Environmental Degradation/Impact Findings
- Land Use Planning Findings
- Education of the Public Findings

The FICON Report also recommended that "a standing federal interagency committee should be established to assist agencies in providing adequate forums for discussion of public and private sector proposals, identifying needed research, and in encouraging the conduct of research and development in these areas". The Federal Aviation Administration (FAA) committed to the establishment of an interagency committee in its November 1993 *Report to Congress on Effects of Airport Noise*, and subsequently convened the Federal Interagency Committee on Aviation Noise (FICAN) in November 1993.

FICAN has prepared this report with the following goals in mind: (1) to update FICON findings to reflect research that has been conducted since the FICON Report was published; (2) to summarize additional findings concerning aviation noise issues that were not addressed by FICON; and (3) to identify those aviation noise research issues that still warrant additional research and focus. The report focuses on *those areas where there has been change in understanding or subsequent research that has led to different findings*. FICON findings on technical issues that are not discussed in this report remain unchanged. Further, *this FICAN review is limited to discussion of technical findings as opposed to policy analyses*. While it is appropriate for FICAN to determine that the scientific findings of a particular dose-response relationships between aircraft noise and effects are scientifically valid, it is not appropriate for FICAN to identify a specific noise level as a threshold of impact. Those policy analyses and decisions are left to the discretion of FICAN member agencies.

Section 2 provides FICAN’s current finding on the following topics: awakenings from aircraft noise; effects of noise on children’s learning; annoyance; and accuracy of noise model predictions.

Subsequent to the publication of the FICON Report, additional aviation noise issues have arisen and been brought to FICAN’s attention. These issues are discussed in Section 3, and include: low frequency noise, and noise in national parks and wilderness areas.

In Section 4, FICAN summarizes research recommendations in a number of areas:

- Non-auditory health effects;
- Sleep disturbance;
- Emerging aviation noise issues related to non-traditional vehicles, including unmanned aerial systems (UAS), helicopters, military fighter jet aircraft and the phenomenon of crackle, commercial space, and civil supersonic aircraft;
- Noise in national parks, wilderness, and other rural areas; and
- Supplemental metrics.

⁴ Federal Interagency Committee on Noise, *Federal Interagency Review of Selected Airport Noise Analysis Issues*, August 1992; at: <http://www.fican.org/pdf/nai-8-92.pdf>.

2 UPDATE OF FICON FINDINGS

Aviation noise research conducted since the issuance of the 1992 FICON Report has resulted in findings that confirm or modify those made in the 1992 FICON Report. These research areas include:

- Annoyance
- Awakenings from aircraft noise
- Effects of noise on children’s learning
- Accuracy of noise model predictions

This section presents, for each of these topics, a summary of selected FICON 1992 findings, research conducted since the 1992 FICON Report, and FICAN’s current finding on the topic or recommendations for additional research.

2.1 Annoyance

Annoyance is a summary measure of the general adverse reactions persons may experience when living in noisy environments. Annoyance includes reactions to noise events that may cause such effects as: speech interference (conversation, interference with telephone, radio and television); sleep disturbance; and other activity interference.

2.1.1 FICON Finding on DNL as Adequate Measure of Noise Impact Based on Annoyance

FICON recommended Day-Night Average Sound Level (DNL) as the preferred noise metric for assessing aircraft noise. FICON stated that “the methodology employing DNL as the noise exposure metric and appropriate dose-response relationships (primarily the Schultz curve for Percent Highly Annoyed⁵) to determine noise impacts on populations is considered the proper one for civil and military aviation scenarios in the general vicinity of airports.” The “revised Schultz curve”, referred to as USAF, as then presented by FICON, is shown below.

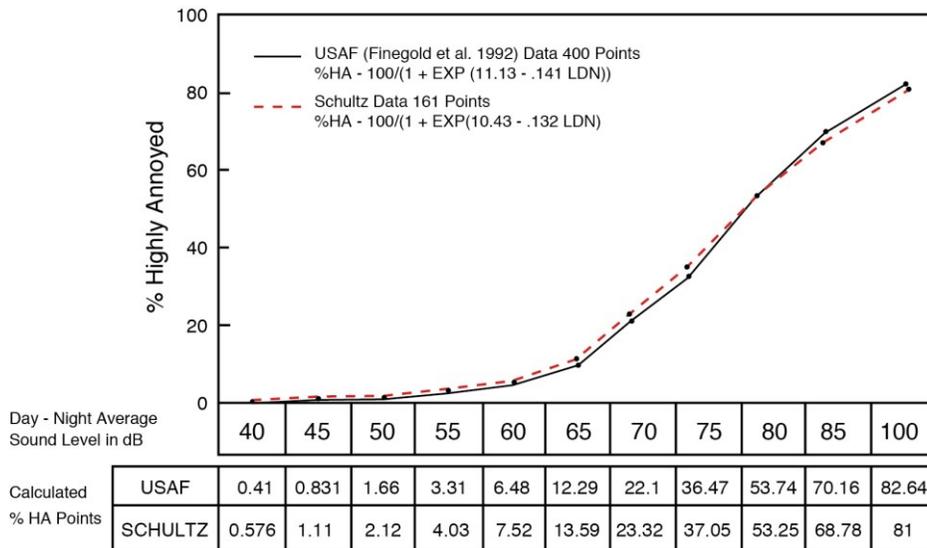


Figure 1. Revised Schultz Curve, FICON (Source: FICON, 1992)

⁵ Schultz T.J., 1978. “Synthesis of Social Surveys on Noise Annoyance.” *Journal of the Acoustical Society of America* 64(2): 377-405. <http://doi.org/10.1121/1.382013>

2.1.2 Aircraft Annoyance Research since FICON

The updated Schultz dose-response curve presented in the 1992 FICON Report contained data from all modes of transportation. Since the FICON Report was published, additional annoyance surveys and meta-analyses have been conducted and catalogued⁶. In general, the findings suggest the following: (1) people are more annoyed by aircraft noise than by surface transportation noise; and (2) Annoyance due to aircraft noise is greater than that described by the dose-response curve recommended by FICON.

There are some indications from European studies that annoyance caused by aircraft noise has increased since the FICON report. In the U.S., the FAA is conducting concurrent community annoyance surveys of residents living near 20 airports with scheduled air carrier service to update the scientific evidence on the relationship between aircraft noise exposure and its effects on communities around airports.

From the earliest surveys to the most current, research suggests that noise exposure explains only part of the variance in annoyance. Demographic factors have been shown to have little influence. Attitudinal factors and general sensitivity to noise are more important, but they still leave unexplained large differences among communities⁷.

The International Standards Organization (ISO) released a new annex to ISO Standard 1996- Part 1⁸, which specifies methods to assess environmental noise and gives guidance on predicting the potential annoyance response of a community to long-term exposure from various types of environmental noises. It includes an updated community annoyance prediction curve based on analyses that include more current data.

2.1.3 FICAN Recommendation

FICAN member agencies are considering the implications of the ISO standard in conjunction with federal research studies regarding annoyance.

FICAN will review applicable research studies as they become available. Recommendations and decisions on whether or not to review and revise noise impact thresholds currently in effect due to updated annoyance relationships will be left to agency discretion.

In addition, FICAN notes that recent research on aircraft noise annoyance has been focused around civilian airports. Additional research is needed to identify possible differences in annoyance around military aviation facilities.

2.2 Awakenings from Aircraft Noise

The effect of aviation noise on sleep is a long-recognized concern of those interested in addressing the impacts of noise on people. Early studies of sleep disturbance were conducted mainly in laboratories, using various indicators of response (electroencephalographic recordings, verbal response [morning after questionnaires], button push, etc.). Field studies also were conducted, in which subjects were exposed to noise in their own homes.

⁶ Bassarab R., Sharp B., and Robinette B., “An Updated Catalog of Social Surveys of Residents’ Reaction to Environmental Noise (1943-2008)”, Wyle Report 09-18, November 2009. (Also DOT/FAA/AEE/2009-01 and DOT-VNTSC-FAA-10-02).

⁷ Fidell S., Mestre V., Schomer P., Horonjeff R., and Reid T., “A systematic rationale for defining the significance of aircraft noise impacts” *Journal of the Acoustical Society of America* 136 (3), September 2014.
<http://dx.doi.org/10.1121/1.4892933>

⁸ International Standards Organization, ISO 1996-1:2003, *Acoustics -- Description, measurement and assessment of environmental noise -- Part 1: Basic quantities and assessment procedures*.

2.2.1 FICON Finding on Awakenings from Aircraft Noise

In 1992, FICON recommended an interim dose-response curve to predict the percent of the exposed population expected to be awakened (% awakening) as a function of the exposure to single event noise levels expressed in terms of sound exposure level (SEL). This interim curve was based on the data presented in the 1989 study by Pearsons⁹ and summarized in a 1992 article¹⁰ by Finegold. The 1992 FICON Report recommended continued research into community reactions to aircraft noise, including sleep disturbance. The 1992 FICON Report also acknowledged that “single event metrics are of limited use in predicting and interpreting cumulative noise exposure impacts.”¹¹

2.2.2 Research on Noise Induced Awakening since FICON

Since the adoption of FICON's interim curve in 1992, substantial field research, mostly outside U.S., in the area of sleep disturbance has been completed, using a variety of test methods, and in a number of locations. In 2012, in collaboration with colleagues from the German Aerospace Center (DLR)¹², American scientists developed a methodology to monitor physiological changes in field conditions. A combination of ECG electrodes and actigraphs is non-invasive and an inexpensive technique that can be easily applied to identify awakenings. U.S. pilot field studies using this methodology have been conducted^{13,14} to examine whether the indoor noise level of single aircraft events was related to awakenings determined with the ECG and actigraphy.

The findings were similar to those found in two studies conducted by the German Aerospace Center. The first occurred in the vicinity of Cologne-Bonn airport and is known as STRAIN (STudy on human Response on Aircraft Noise) study¹⁵; the second occurred in the vicinity of Frankfurt airport and is referred to as NORAH (NOise-Related Annoyance, cognition and Health) study¹⁶. Follow on studies with larger sample sizes and a wider range of noise levels are needed to obtain more precise exposure-response functions for health impact assessments of awakenings caused by aircraft noise.

⁹ Pearsons K., Barber D., and Tabachnik B., 1989. “Analysis of the Predictability of Noise-Induced Sleep Disturbance.” NSBIT Report No. HAD-TR-89-029. Brooks AFB, Texas: U.S. Air Force, Human Systems Division, Noise and Sonic Boom Impact Technology, Advanced Development Program Office (HQ HSD/YAH).

¹⁰ Cited as “Finegold, L.S., Harris C.S., VonGierke, H.E., 1992. ‘Applied Acoustical Report: Criteria for Assessment of Noise Impacts on People.’ submitted to *Journal of Acoustical Society of America*. June 1992” in the 1992 FICON report but not published. See also Finegold, Harris, and von Gierke. 1994. *Community Annoyance and Sleep Disturbance: Updated Criteria for Assessing the Impacts of General Transportation Noise on People*. Noise Control Eng. J. 42 (1), Jan–Feb <https://doi.org/10.3397/1.2827857>

¹¹ FICAN Report Page ES-2.

¹² The abbreviation comes from the name of Germany’s aeronautical and space research center: Deutsche Zentrum für Luft- und Raumfahrt (DLR)

¹³ Basner M., 2012. “Design for a U.S. Field Study in the Effects of Aircraft Noise on Sleep”, Report No. PARTNER-COE-2012-003.

¹⁴ Basner M. and McGuire S. *Pilot Sleep Study near Philadelphia International Airport*, ASCENT Project 17 Report, August 2016

¹⁵ Bartel S., 2014. “Aircraft noise-induced annoyance in the vicinity of Cologne/Bonn Airport-The examination of short-term and long-term annoyance as well as their major determinants,” PhD Dissertation Thesis, Technische Universität Darmstadt.

¹⁶ <http://www.laermstudie.de/en/>

2.2.3 FICAN Recommendation

In 2008, FICAN recommended ANSI S12.9/6 (2008)¹⁷ for use in estimating impact of aircraft noise on awakenings¹⁸. The ANSI S12.9/6 (2008) methodology predicts sleep disturbance in terms of probability of awakening associated with noise levels expressed in terms of indoor A-weighted sound exposure level. The Standard was developed from field studies of behavioral awakening primarily in homes near airports subject to routine jet aircraft operations, and reflects data from about 10,000 subject-nights of observations in a variety of communities in the United States and Europe. The Standard provides an equation for quantifying the probability of awakening as a function of both the time (in minutes) since retiring and the indoor A-weighted sound exposure level in a sleeper's quarters. The Standard also provides a method for calculating the probability of awakening at least once from the distributions of single noise events.

The ANSI Standard addresses concerns raised by FICAN, such that: (1) the methodology is based on behavioral awakening data collected from people in their own homes, and (2) it provides a method for computing cumulative impacts of an entire night's noise events.

FICAN recommends that environmental impact analyses that address sleep disturbance utilize ANSI S12.9-2008¹⁹, Quantities and Procedures for Description and Measurement of Environmental Sound — Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes.

It should be noted that this guidance was developed based on data collected in residential settings. Thus, it may underestimate sleep disturbance in unfamiliar and outdoor settings.

2.3 Effects of Noise on Children's Learning

Research on the effects of aircraft noise on children's learning suggests that aircraft noise can interfere with learning in the following areas: reading, motivation, language and speech acquisition, and memory. The strongest findings to date have been in the area of reading, where studies have shown that children can be negatively affected by aircraft noise.

2.3.1 FICAN Finding on Noise in Schools

FICAN recommended that noise in schools be addressed through the use of two metrics: (1) the Long-Term Equivalent Sound Level [$L_{eq}(x)$] (where X represents the time period of concern) or (2) Time Above (TA) for analysis of school communications requirements, also during specific hours.

¹⁷ ANSI S12.9/6, 2008, *Quantities and Procedures for Description and Measurement of Environmental Sound — Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes*.

¹⁸ Federal Interagency Committee on Aviation Noise (FICAN), *FICAN Recommendation for use of ANSI Standard to Predict Awakenings from Aircraft Noise*, December, 2008 at: https://fican1.files.wordpress.com/2015/10/findings_awakenings_2008.pdf.

¹⁹ As of the publication of this report, the American Acoustical Society has submitted for balloting to withdraw ANSI S12.9-20008; stating that "Additional information published since the development of ANSI/ASA S12.9-2008/Part 6 ("the Standard") calls into question the generalizability of its predictions, as well as its suitability for NEPA-related purposes. Experience in application of the Standard has also revealed limitations to its ability to distinguish among the environmental impacts of preferred and alternative proposed actions. By itself, however, the newly available information offers no unambiguous basis for revising the 2008 Standard". While research continues to mature, FICAN endorses the use of the process described in the standard, which represents the best available information for quantifying impacts due to awakenings.

2.3.2 Research on Noise and Learning since FICAN

Considerable research on the effects of noise on learning has been conducted since 1992. It generally shows that higher levels of aircraft noise can be associated with poorer reading and memory recognition²⁰. The European Union-funded RANCH Project²¹ (road traffic and aircraft noise exposure and children's cognition and health: exposure-effect relationships and combined effects) investigated the relationship between exposure to aircraft and road traffic noise and cognitive and health outcomes in a number of European Union countries. The study found exposure-response associations between aircraft noise and impaired reading comprehension and impaired recognition memory, after taking demographics and other noise sources into account.²²

In the U.S., FICAN undertook a pilot study²³ to evaluate the effectiveness of school sound insulation programs in 2004. The study was designed to answer the following: Is abrupt aircraft noise reduction within classrooms related to mandatory, standardized test-score improvement? The study found (1) a substantial association between noise reduction and decreased failure (worst-score) rates for high-school students, and (2) significant association between noise reduction and increased average test scores for student/test subgroups. In general, the study found little dependence upon student group or test type.

In 2013, ACRP Project 02-26²⁴, *Assessing Aircraft Noise Conditions Affecting Student Learning*, examined the relationship between changes in scholastic achievement to changes in aircraft noise exposures taking into account the presence of sound insulation and potentially confounding factors, such as, school characteristics and the socio-economic profile of the student population. The study found statistically significant associations between airport noise and student test scores, after taking demographic and school factors into account. Similarly, significant associations were also observed for ambient noise and total noise on student test scores, demonstrating that noise from other sources as well as aircraft might play.

In 2017 ACRP 02-47²⁵, *Assessing Aircraft Noise Conditions Affecting Student Achievement – Case Studies*, case studies at eleven schools near LAX were conducted to develop and implement a rigorous methodology to identify and measure which factors at the individual classroom, student, and teacher level influence the impact of aircraft noise on student achievement. The study was also designed to identify appropriate metrics that define the level and characteristics of aircraft noise that impact student achievement. The results of the classroom observations show that the predominant source of distraction for students was other students, accounting for 50.9% of the total number of distraction events. The second largest source of distractions was “other” at 29.2%. Aircraft operations occurred near the eleven schools throughout the study period, however there were no observed aircraft noise related distractions on any day of the study period. Even though no in-class distractions were directly attributed to individual

²⁰ Clark C. *Aircraft noise effects on health: report prepared for the UK Airport Commission* (Report number 150427). London: Queen Mary University of London, 2015.

²¹ van Kempen E, van Kamp I, Nilsson, M, Lammers J., Emmen H., Clark C., and Stansfeld S., “The role of annoyance in the relation between transportation noise and children’s health and cognition,” *J. Acoust. Soc. Am.* Volume 128, Issue 5, pp. 2817-2828, 2010; <http://dx.doi.org/10.1121/1.3483737>

²² Clark C, Martin R, van Kempen E, Alfred T., Head J., Davies H, Haines M., Lopez Barrio I, Matheson M., and Stansfeld A., “Exposure-effect relations between aircraft and road traffic noise exposure at school and reading comprehension - The RANCH project.” *Am J Epidemiol* 2006; 163(1): 27-37; <https://doi.org/10.1093/aje/kwj001>

²³ Eagan M, Anderson G, Nicholas B., Horonjeff R., Tivnan T., “Relation Between Aircraft Noise Reduction in Schools and Standardized Test Scores”, FICAN, February 2004 at http://www.fican.org/pdf/FICAN_Schools_Study_Handout.pdf.

²⁴ ACRP Project 02-26, *Assessing Aircraft Noise Conditions Affecting Student Learning* at: <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=2797>.

²⁵ ACRP 02-47, *Assessing Aircraft Noise Conditions Affecting Student Achievement--Case Studies* <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3693>.

aircraft noise events, associations between the overall level of aircraft noise exposure in DNL do appear to correlate with teacher-reported interference of school activities in some situations. Teachers from schools experiencing DNL above 55dB were more likely to report interference with communication, students' attention, students' concentration, students' performance, and the quality of students' work.

2.3.3 FICAN Finding

ANSI has published a standard (ANSI S12.60-2002, *Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools*) providing acoustical performance criteria, suggested architectural design requirements and guidelines for *newly constructed* school classrooms and other learning spaces²⁶. For sound insulation guidance for retrofitting *existing* classrooms, the FAA Airport Improvement Program (AIP) Handbook²⁷ is the most appropriate source. The guidelines are keyed to the acoustical qualities needed to achieve a high degree of speech intelligibility in learning spaces. The Standard also includes detailed procedures for measuring conformance to the Standard. The Standard recommends that core learning spaces having enclosed volumes not greater than 20,000 ft³ not be exposed to greater than 40 dB of A-weighted unsteady background noise from transportation noise sources for more than 10% of the noisiest hour; for core learning spaces having enclosed volumes greater than 20,000 ft³, this level of exposure should not exceed 45 dB for more than 10% of the noisiest hour.

While there is evidence to suggest that aircraft noise has adverse learning effects, FICAN concludes there is not sufficient information to quantify the effect in terms of a recommended noise metric or dose-response relationship. FICAN recommends that analyses addressing noise effects on children's learning include predictions of school-day noise exposure (8-hourLeq) until research suggests a more appropriate metric. FICAN also recommends that classroom acoustic design for new construction follow guidelines presented by ANSI S12.60-2002, Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools.

2.4 Accuracy of Noise Predictions below DNL 65

Noise modeling technology has evolved considerably since the FICON Report was published; models now produce more reliable results at levels below DNL 65 dB. Since the publication of the 1992 FICON Report, noise models have been enhanced, new metrics have been added, and a number of noise model validation efforts have occurred. These include a 2003 report on modeling the audibility of four aircraft in the Grand Canyon²⁸, a 2005 FICAN study of two models used for modeling aircraft noise in national parks²⁹, an FAA-sponsored study that compared FAA's Integrated Noise Model (INM) results to measured data³⁰ and an Aviation Environmental Design Tool (AEDT) Uncertainty Quantification Report³¹.

2.4.1 FICON Finding on the Accuracy of Noise Model Predictions

FICON concluded that noise model predictions could generally be considered accurate at levels above DNL 65 dB. Specifically, the FICON Report stated, "For a variety of reasons, noise predictions and

²⁶ ANSI S12.60-2002, *Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools*, June 2002, American National Standards Institute, Inc.

²⁷ http://www.faa.gov/airports/aip/aip_handbook/

²⁸ HMMH Report No. 295860.29, *Aircraft Noise Model Validation Study*. January 2003.

²⁹ FICAN Report *Assessment of Tools for Modeling Aircraft Noise in the National Parks*. March 18, 2005.

³⁰ Plotkin K., Page J., Gurovich Y., and Hobbs C., *Detailed Weather and Terrain Analysis for Aircraft Noise Modeling*, Wyle Report 13-01, April 2013. (Also DOT/FAA/AEE/2009-01 and DOT-VNTSC-FAA-10-02).

³¹ AEDT 2a Uncertainty Quantification Report, August 2013. <https://aedt.faa.gov/Documents/AEDT_2a_Uncertainty_Quantification_Report.pdf>

interpretations are frequently less reliable below DNL 65 dB. DNL prediction models tend to degrade in accuracy at large distances from the airport. Therefore, predictions of noise exposure and impact below DNL 65 dB should take the possibility of such inaccuracy into account.”

2.4.2 Current State of Noise Model Accuracy

Accuracy of noise models is directly related to the accuracy of noise model input, internal databases, and user expertise, and not to the level of noise being computed, as reported by FICON.

Agencies are continuously investing in improvements to noise prediction models. These improvements include better source data, improved performance modeling and improved propagation modeling, such that the models have significantly improved over time, especially their capability to accurately model aircraft noise at greater distances from the airports and at lower noise levels.^{32,33,34,35}

2.4.3 FICAN Finding on Noise Model Accuracy

Modern aircraft noise models are able to predict noise exposure with acceptable accuracy whether above or below 65 dB DNL (under most conditions); absolute accuracy has not been quantified, but depends on the accuracy of input, internal databases, and user proficiency, rather than on the model itself.

3 AVIATION NOISE ISSUES NOT ADDRESSED BY FICON

The FICON Report was focused primarily on aircraft noise issues in the vicinity of airports. It did not specifically address noise in rural areas or in parks and wilderness areas. Similarly, FICON’s discussion of noise effects focused primarily on annoyance and related effects. Additional research since 1992 has resulted in a significant body of research in the following areas:

- Low Frequency Noise
- Noise in National Parks and Wilderness Areas

3.1 Low Frequency Aircraft Noise

Low frequency noise (LFN) associated with fixed wing aircraft (i.e., frequency content associated with start of takeoff roll and deployment of thrust reversers upon landing) has been identified as a cause of significant levels of rattle-related annoyance in some locations near air carrier airports. LFN was not specifically addressed by FICON, but has been an issue that has been raised in the airport context, associated mainly with annoyance.

³² Danish Ministry of the Environment, Environmental Protection Agency, Nord2000: Nordic noise prediction method, <http://eng.mst.dk/topics/noise/traffic-noise/nord2000---nordic-noise-prediction-method/>, accessed 5/15/15.

³³ DELTA Report AV 1117/06 Nord2000. *Validation of the Propagation Model*. March 31, 2006.

³⁴ US DOT/FAA/AEE/2012-03 and 2012-04. *Assessment of the Hybrid Propagation Model, Volume 1: Analysis of Noise Propagation Effects and Volume 2: Comparison with the Integrated Noise Model*. August 2012.

³⁵ US DOT/FAA/AEE/2012-05 *The Analysis Of Modeling Aircraft Noise With The Nord2000 Noise Model*. August 2012.

3.1.1 Low Frequency Noise Research

In 2002, FICAN reviewed the recommendation of an expert panel convened to evaluate low frequency noise around Minneapolis–St. Paul International Airport (MSP)³⁶. The MSP Expert Panel recommended the adoption of a Low Frequency Sound Level Metric (LFSL), and further recommended that LFSL doses below 70 dB be considered compatible with residential use without requiring any remedial actions and that LFSL doses above 87 dB be deemed as incompatible with residential use and not amenable to successful remedial actions. Where the LFSL dose is between 70 dB and 87 dB, remedial treatment was identified as having a likelihood of success.

FICAN did not support the proposed LFSL metric³⁷ for a number of reasons, and concluded that additional research was necessary to address the complex interaction between (1) building construction, (2) the contribution of loudness to annoyance, and (3) the contribution of rattle to annoyance.

Subsequent to the FICAN finding made in 2002, FAA’s Partnership for AiR Transportation Noise and Emissions Reduction (PARTNER) Center for Excellence conducted a study of LFN³⁸, designed to address FICAN’s concerns. While the PARTNER study included findings on LFN and rattle generation during takeoff and landing, made recommendations concerning LFN analysis methods, provided criteria on potential for annoyance, and made recommendations for rattle avoidance, additional research is still needed. Specifically, the PARTNER study did not address community annoyance and response to LFN; this additional information would allow policy makers to develop appropriate interventions and mitigation treatments.

3.1.2 FICAN Finding on Low Frequency Noise

FICAN finds that additional research needs to be conducted before a LFN metric and an associated dose-response relationship can be recommended. For airports with low frequency noise concerns, supplemental noise analysis – possibly including vibration measurements – should be considered.

3.2 Noise in National Parks, National Wildlife Refuges, and Historic Sites

Agency environmental guidance documents give special consideration to the evaluation of the significance of aircraft noise impacts on noise-sensitive areas within national parks, national wildlife refuges, and historic sites including traditional cultural properties, based on the understanding that the DNL 65 dB threshold of significance for noise does not adequately address the effects of noise on visitors to areas within a national park or national wildlife refuge.

3.2.1 Research on Visitor Experience

Dose-response studies of aircraft noise in national parks have provided quantitative correlations between visitor survey responses and noise exposure. Though urban and park studies differ in the duration of noise exposure and the metric used, it is clear that park visitors are more sensitive to noise than urban residents. For annoyance and interference with the experience of natural quiet, studies at frontcountry locations have shown that LAeq computed for the duration of the visit is the best summary of noise

³⁶ MSP LFN Expert Panel, *Findings of the Low-Frequency Noise Expert Panel of the Richfield-MAC Mitigation Agreement of 17 December 1998*, Volumes I, 11, and III, 30 September 2000.

³⁷ FICAN, *FICAN on the Findings of the Minneapolis-St. Paul International Airport (MSP) Low-Frequency Noise (LFN) Expert Panel*, April 2002, at: http://www.fican.org/pdf/lfn_expertpanel.pdf.

³⁸ Hodgdon K, Atchley A., and Bernhard R.J., Partnership for AiR Transportation Noise and Emissions Reduction An FAA/NASA/Transport Canada-sponsored Center of Excellence, *Low Frequency Noise Study*, Report No. PARTNER-COE-2007-00 April 2007, at: <http://web.mit.edu/acroastro/partner/reports/proj1/lfnreport-2007-001.pdf>.

exposure for predicting visitor survey responses.^{39,40} For backcountry visitors, the best models of survey responses include a measure of percent time audible. These studies and additional social science research on the relationships between noise levels and visitor experience have revealed a variety of factors that influence visitor perceptions of noise: expectations of natural quiet, noise source characteristics, visitor group composition, and other factors.^{41,42,43,44,45}

3.2.2 Research on Wildlife

Much research has been conducted looking at the effect of noise sources, beyond aviation, and their effects on wildlife. Decisive evidence of the effects of noise on wildlife has emerged from field studies that have been controlled for potential confounding effects and experimental studies that have broadcast road and energy development noise while minimizing other disturbing stimuli.^{46,47,48,49,50} Additional studies have quantified changes in vigilance and discussed potential implications for predation and

³⁹ Miller N. P., 1999. The effects of aircraft overflights on visitors to US National Parks. *Noise Control Engineering Journal*, 47(3), 112-117. <https://doi.org/10.3397/1.599294>

⁴⁰ Anderson G. S., Rapoza A. S., Fleming G. G., and Miller N. P., 2011. Aircraft noise dose-response relations for national parks. *Noise Control Engineering Journal*, 59(5), 519-540. <https://doi.org/10.3397/1.3622636>

⁴¹ Yang W., & Kang J., 2005. Acoustic comfort evaluation in urban open public spaces. *Applied Acoustics*, 66(2), 211-229. <http://dx.doi.org/10.1016/j.apacoust.2004.07.011>

⁴² Pilcher E. J., Newman P., and Manning R. E., 2008. Understanding and managing experiential aspects of soundscapes at Muir Woods National Monument. *Environmental Management*, 43(3), 425-435. <http://dx.doi.org/10.1007/s00267-008-9224-1>

⁴³ Aasvang G. M. and Engdahl B., 2004. Subjective responses to aircraft noise in an outdoor recreational setting: a combined field and laboratory study. *Journal of Sound and Vibration*, 276(3-5), 981-996. <http://dx.doi.org/10.1016/j.jsv.2003.08.042>

⁴⁴ Krog N. H., and Engdahl B., 2004. Annoyance with aircraft noise in local recreational areas, contingent on changes in exposure and other context variables. *Journal of the Acoustical Society of America*, 116(1), 323-333. <https://doi.org/10.1121/1.1756162>

⁴⁵ Rapoza A., Sudderth E., and Lewis K., 2015. Aircraft dose-response relations for day-use visitors to backcountry areas in National Parks. *The Journal of the Acoustical Society of America*, 138, (2090), 2405-2406. <http://dx.doi.org/10.1121/1.4929934>

⁴⁶ Habib L, Bayne E. M. and Boutin S, 2007. Chronic industrial noise affects pairing success and age structure of ovenbirds *Seiurus aurocapilla*. *Journal of Applied Ecology*. 44:176-184. <http://dx.doi.org/10.1111/j.1365-2664.2006.01234.x>

⁴⁷ Blickley J. L., Blackwood D., and Patricelli G. L., 2012. Experimental evidence for the effects of chronic anthropogenic noise on abundance of greater sage-grouse at leks. *Conservation Biology*, 26(3), 461-471. [10.1111/j.1523-1739.2012.01840.x](http://dx.doi.org/10.1111/j.1523-1739.2012.01840.x)

⁴⁸ McClure C. J., Ware H. E., Carlisle J., Kaltenecker G., and Barber, J. R., 2013. An experimental investigation into the effects of traffic noise on distributions of birds: avoiding the phantom road. *Proceedings of the Royal Society B: Biological Sciences*, 280(1773), 20132290. <http://dx.doi.org/10.1098/rspb.2013.2290>

⁴⁹ Crino O. L., Johnson E. E., Blickley J. L., Patricelli G. L., and Breuner, C. W., 2013. Effects of experimentally elevated traffic noise on nestling white-crowned sparrow stress physiology, immune function and life history. *The Journal of Experimental Biology*, 216(11), 2055-2062. <http://dx.doi.org/10.1242/jeb.081109>

⁵⁰ Francis C. D., Paritsis J., Ortega C. P., and Cruz A., 2011. Landscape patterns of avian habitat use and nest success are affected by chronic gas well compressor noise. *Landscape ecology*, 26(9), 1269-1280.

ecological processes.^{51,52,53} Collectively, this literature demonstrates that chronic noise adversely affects wildlife at lower levels than are typically present in urban settings. Notably, most of these studies involved chronic exposures to noise that are less variable in level and have fewer noise-free intervals than many aircraft noise scenarios.

3.2.3 FICAN Finding on Noise in National Parks and Wilderness Areas

There has been substantial research to produce quantitative dose-response relationships on visitor response to air tour noise, and these relationships are being used in ongoing park management efforts.^{54,55} Since 2000, there has been significant research suggesting that wildlife are affected by noise, but there are few studies pertaining to the effects of aviation noise and no dose-response relationship has been established. Regarding cultural resources, there have been a handful of studies, but no conclusive findings; additional research is needed in order to make specific recommendations.

4 AVIATION NOISE RESEARCH NEEDS

Although considerable research has been described in this document, FICAN has identified several high priority aviation noise research areas:

- Annoyance
- Non-auditory health effects
- Sleep disturbance
- Potential differences in annoyance from helicopter noise compared with fixed-wing aircraft noise
- Noise in national parks, wilderness, and other rural areas
- Emerging aviation noise issues related to non-traditional vehicles, including unmanned aerial systems (UAS), military fighter jet aircraft and the phenomenon of crackle, commercial space, and civil supersonic aircraft. Additionally, FICAN believes it useful to clarify and restate its findings with respect to supplemental metrics. Each of these is described below.

4.1 Annoyance

A number of key research issues regarding annoyance are of interest, including:

- Do older airport noise annoyance data from the U.S., more recent data from other countries, or the currently underway, FAA-sponsored annoyance research provide better guidance for assessing current U.S. noise impacts?
- Annoyance has been widely used as a summary measure of noise impact. With greater understanding of components such as sleep interference and non-auditory health effects, is there an opportunity to examine interrelationships between components and gain a better understanding of overall impact?

⁵¹ Quinn J. L., Whittingham M. J., Butler S. J. and Cresswell W., 2006. Noise, predation risk compensation and vigilance in the chaffinch *Fringilla coelebs*, *Journal of Avian Biology* 37:601-608. <http://dx.doi.org/10.1111/j.2006.0908-8857.03781.x>

⁵² Wale M. A., Simpson S. D., and Radford A. N., 2013. Noise negatively affects foraging and antipredator behaviour in shore crabs. *Animal Behaviour*, 86(1), 111-118. <http://dx.doi.org/10.1016/j.anbehav.2013.05.001>

⁵³ Francis C. D., Kleist N. J., Ortega C. P., and Cruz, A., 2012. Noise pollution alters ecological services: enhanced pollination and disrupted seed dispersal. *Proceedings of the Royal Society B: Biological Sciences*, 279(1739), 2727-2735. <http://dx.doi.org/10.1098/rspb.2012.0230>

⁵⁴ Anderson G. S., Rapoza A. S., Fleming G. G., and Miller, N. P., 2011, *op. cit.*

⁵⁵ Rapoza A., Sudderth E., and Lewis K., 2015, *op. cit.*

- Little is known about residents' annoyance to infrequent, intense aircraft noise events. Examples include certain military operations, sonic booms, unscheduled commercial operations, and, in the future, unmanned aerial systems (UAS) and commercial launch vehicles. Does the "equal energy hypothesis", as found in DNL, still apply? A related issue that requires further investigation is the rate at which annoyance declines as the time since the last noise event increases. What research should be conducted on the growth and decay of annoyance under intermittent exposure conditions?
- How do abrupt changes in noise exposure correlate with changes in annoyance? Such changes can result from construction of new runways and redesign of airspace, or establishment of new Special Use Airspace/Airspace for Special Use for military testing and training.
- What effect do the unique acoustical characteristics (frequency content, duration, level, etc.), of aircraft such as launch vehicles, UAS, and helicopters have on annoyance?
- Much has been learned regarding observed differences in annoyance between individuals experiencing the same aircraft noise environment. What are the causes of observed differences in annoyance between communities experiencing similar noise environments?

4.2 Non-Auditory Health Effects

The World Health Organization⁵⁶ defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Non-auditory health effects can be defined as those physiological effects on health and well-being which are caused by aircraft noise, but excluding effects on hearing. These include: stress response, cardiovascular effects, mental health effects, and mortality. (Annoyance can be considered a non-auditory health effect and has been discussed above).

Plausible biological mechanisms have been identified that support the theory that long term exposure to environmental noise may affect the human cardiovascular system and thus contribute to disease. Few studies have examined aircraft noise, but extensive research has demonstrated that chronic road traffic noise has non-auditory (cardiovascular) health effects⁵⁷. An open question is how to apply these findings to aircraft noise, given the different characteristics of aviation noise from roadway traffic (i.e., intermittency, maximum levels, etc.).

Associations between aircraft noise exposure and adverse effects such as hospital admissions and birth outcomes have been observed in a small number of studies. These studies frequently have difficulties regarding accurate estimates of noise exposure and control of confounding factors. There is a need for more and better-designed studies.

Before adopting policies and methodologies for predicting health outcomes, research needs to be conducted to quantify relationships between aircraft noise level (dose) and the health outcome in question (effect). FICAN believes it is premature to adopt quantification methods for computing burden of disease from environmental noise (including the computation of healthy life years lost) until this fundamental research has been developed and validated.

⁵⁶ Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.

⁵⁷ Basner M., Babisch W., Davis A., Brink M., Clark C., Janssen S., and Stansfeld S., "Auditory and non-auditory effects of noise on health *The Lancet*, Volume 383, No. 9925, p1325–1332, 12 April 2014, Published Online: 30 October 2013. [http://dx.doi.org/10.1016/S0140-6736\(13\)61613-X](http://dx.doi.org/10.1016/S0140-6736(13)61613-X)

4.3 Sleep Disturbance

FICAN believes that research focused on collecting physiological measurement is likely to provide more insight than studies relying upon participants logging noise-induced awakenings. Research questions include:

- What is the contribution of aircraft noise to sleep disturbance? Can aircraft noise impacts be isolated from other sleep disruptions?
- To what degree are sleep disturbance responses conditioned on social, cultural, and other community contexts?

Much research has been conducted on the relationship between chronic sleep disruption and negative health effects. What is the potential contribution of aircraft noise-induced sleep disturbance to broader health outcomes?

4.4 Helicopters

Helicopter noise annoyance has become a bigger challenge in recent years, as helicopter operations have proliferated. Helicopter noise differs from fixed-wing aircraft noise in many ways; the frequency content, sound level onset and decay rates, and duration constitute a unique noise signature that differs significantly from that of fixed-wing aircraft. These distinctions may result in differences in human reaction to helicopter noise versus fixed-wing aircraft noise. There may also be other psychological factors affecting human response to helicopter noise, including detectability and perceived safety and privacy concerns. Further, helicopter operations and their routes are often more variable than those for fixed-wing aircraft and frequently occur at lower altitudes. As a result, there is currently a lack of understanding regarding the relationship between helicopter noise and community response. Questions being considered as part of ongoing research include:

- What are the acoustical and non-acoustical factors that influence community annoyance to helicopter noise?
- How do the acoustical and non-acoustical factors that influence community annoyance compare to those contributing to fixed-wing aircraft community annoyance? An initial attempt to determine whether helicopter noise is more annoying than fixed-wing noise has been conducted through ACRP 02-48 “Assessing Community Annoyance of Helicopter Noise.”⁵⁸
- Research methods relating noise exposure to surveyed community annoyance have been developed for road, rail, and fixed-wing aircraft. Are these methods appropriate for helicopters, given the differences in the nature of helicopter noise and their unique operational characteristics?
- Can current noise prediction models be adapted to address unique aspects of helicopter noise?
- Are there opportunities to develop operational noise abatement procedures for helicopters?

4.5 Noise in National Parks and Wilderness Areas

4.5.1 Research on Visitors

Research needs regarding visitor experience range from replicating recent/previous studies, to realizing appropriate sample sizes, to opening new research topics.

Some additional questions that need to be answered are:

- What additional information is needed from day trip and overnight visitors to generate the necessary dose-response results?

⁵⁸ ACRP 02-48, Assessing Community Annoyance of Helicopter Noise
<http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3694>

- Should research focus on the physiological responses to noise and connections between physiological responses and survey responses? This could provide opportunities for a broader investigation of aircraft noise impacts as well as onsite evidence of the restorative benefits of quiet environments and the sounds of nature.

4.5.2 Research on Historic and Cultural Sites

Additional studies in historical or cultural parks may be needed to determine effects of aircraft noise. Two key questions to be explored regarding historic and cultural sites are:

- Does aircraft noise interfere with the historical or cultural significance of some national parks?
- Do visitors feel their opportunities to experience the historical and cultural resources in parks are impacted?

4.5.3 Research on Wildlife

Recent studies that decisively documented noise impacts on wildlife addressed road and energy development noise. These noise sources differ from aircraft noise in two ways. Road and energy development noise are less intermittent than most aircraft noise scenarios. Also, road and energy development noise are associated with nearby human presence, so animals may not be reacting to the sensory degradation caused by noise itself, but to the threat the noise signifies. Accordingly, research that distinguishes between these mechanisms of wildlife noise responses is important for evaluating aircraft noise impacts, because it is unlikely that most aircraft represent a perceived threat to wildlife. The episodic character of most aircraft noise also raises the largely unresolved issue of the length of time to respond to the onset of noise, and the time required for wildlife to return to their prior state.

Planning efforts often assess impacts to species whose responses to noise have not been studied, and scientific inference usually incorporates a web of supportive reasoning derived from studies that share some similarities with the scenario of interest. These requirements recommend research syntheses to identify which biological factors provide the best guide for selecting other species whose research results will be most relevant. Relevant biological similarities may include studies of other species engaged in similar behaviors, studies of species that play similar ecological roles, studies of species with close evolutionary relationships, studies of species with similar auditory function, and studies of species subject to similar suites of non-acoustic stressors.

4.6 Emerging Issues and New Technologies

Since the 1992 FICON Report was released, market changes and advances in technology have resulted in the emergence and increased prominence of non-traditional vehicles, specifically unmanned aerial systems (UAS), advanced military fighter aircraft, commercial space vehicles, and civil applications of supersonic aircraft. The differences in operational flight characteristics between these non-traditional aerial vehicles and the aircraft upon which current methods, analyses, and findings have been based makes it likely that current metrics and processes will fail to adequately predict adverse effects such as community annoyance.

4.6.1 Unmanned Aerial Systems (UAS)

The rapid and continuing growth of Unmanned Aerial Systems in the National Airspace System has led to the development of a wide range of new vehicles, both fixed- and rotary-wing types. Some, such as multi-rotor vertical lift designs have no precedent as full-scale manned aircraft. From an acoustical perspective, the ones of most interest are those that are different from conventional aircraft either in terms of their noise characteristics or the missions they fly. Some of the current and proposed missions require operations to occur in close proximity to people. Noise may be a contributing factor to response (e.g.,

annoyance) to these vehicles. The development of methodologies to characterize and assess noise from UAS is an emerging field of study.

4.6.2 Military Fighter Jet Aircraft and the Phenomenon of Crackle

New high performance tactical aircraft have different noise characteristics than traditional subsonic, fixed-wing jet aircraft. Crackle, a supersonic jet phenomenon, has been described as “sudden spasmodic bursts of a rasping fricative sound . . . It is a startling staccato of cracks and bangs and its onomatopoe, ‘crackle’, conveys a subjectively accurate impression.”⁵⁹ Potential lines of inquiry include the degree to which crackle from these aircraft affects annoyance and whether current metrics adequately predict annoyance.

4.6.3 Commercial Space Vehicles

Several new vehicles are being developed to launch commercial payloads and tourists, and for government purposes, primarily those of NASA and the DOD. In addition to the traditional NASA and DOD sites, a few new launch facilities have been developed and more are under consideration, some of which are dual-use with aircraft operations. Noise generated by these launch vehicles includes that from the rocket exhaust as well as sonic booms on ascent and descent. The latter includes returning vehicles and re-usable rocket stages. Little is known about the environmental impact from such launch events, which are likely to generate high sound levels or sonic booms on an intermittent basis. Developing methodologies to accurately characterize and assess rocket noise emissions and sonic booms from commercial space vehicles are an emerging field of study.

4.6.4 Civil Supersonic Aircraft

A number of supersonic commercial aircraft have been proposed for development. These aircraft would range in size from small business jets to 40 passenger aircraft. Some intend to fly supersonically over water and others over both land and water. The latter requires that the aircraft be designed and operated in such a way that either, 1) the aircraft’s sonic boom does not reach the ground (known as Mach cut-off flight), or 2) the sonic boom is greatly attenuated relative to all previous supersonic aircraft, both military and civilian. Substantial progress in the past decade by industry, universities, and government agencies indicates that aircraft can be designed to produce sonic booms with far lower amplitudes than, for example, the Concorde. NASA has established the achievement of low boom flight and the creation of an en route standard as a strategic objective for the next decade. NASA has proposed a project that will culminate in the construction of a sub-scale aircraft to demonstrate low-boom technology and to determine public reaction to these low- amplitude sonic booms. The prospect of routine overland supersonic flight raises many of the same issues that pertain to conventional aircraft, including annoyance, sleep disturbance, effects on wildlife, etc.

4.7 Metrics to Supplement DNL (“Supplemental Metrics”)

The 1992 FICON Report recommended that Federal agencies continue to have “discretion in the use of supplemental noise analysis.”⁶⁰

⁵⁹ Gee K. L., Neilsen T. B., Wall A. T., Downing M. J., James M. M., McKinley R. L., “Propagation of crackle-containing jet noise from high-performance engines”, *Noise Control Engineering Journal* 64, 1-12, Jan/Feb 2016 <https://doi.org/10.3397/1/376354>, citing J.E. Ffowcs Williams “‘Crackle’: An annoying component of jet noise”, *J. Fluid Mechanics*, 71, 251–271 <https://doi.org/10.1017/S0022112075002558>

⁶⁰ The relevant text read as follows:

A supplemental metric is any metric, other than DNL, which is used for communicating changes to the noise setting or how individuals experience noise events. It is any metric that supplements the impact information disclosed by the DNL metric. A supplemental metric would be presented with the objective of enhancing the public's understanding and acceptance of impact analysis, usually by de-constructing the constituents of DNL for purposes of explaining particular impacts of interest (e.g., speech interference) in a manner that is readily accessible and comprehended by members of the public who are not trained in acoustics. That is, certain individual effects from aircraft noise, such as sleep disturbance, or non-auditory effects, such as on learning, may lend themselves to being more readily described by supplemental metrics. It must be stressed, however, that when FICAN uses this term (supplemental metric), it is to convey the idea of supplementing DNL in *communicating* effects as opposed to supplementing DNL in *assessing significance* in the context of impact analysis, particularly as defined under the National Environmental Policy Act of 1969 (NEPA) or regulations implementing NEPA. FICAN believes, consistent with guidance published by the President's Council on Environmental Quality (specifically at 40 CFR 1507.3) that ascertaining significance and establishment of thresholds or significance criteria are the province of individual departments and agencies of the US government, relying upon their expertise and understanding of their particular missions, roles, and responsibilities.

Since 1992 substantial effort has been undertaken by Federal agencies to define particular supplemental metrics and assess their efficacy and validity.^{61,62}

Supplemental metrics provide valuable additional information to support understanding of complex, cumulative metrics and allow analysts to tease out and describe various, discrete components and effects embedded within the DNL metric. Supplemental metrics similarly assist in characterizing those discrete aspects of the noise environment that are more sensitive to, and capably described by, a supplemental metric compared to DNL.

Apart from the development and use of supplemental metrics since 1992 described above, it is foreseeable that advances in technology (e.g., increased computational and data storage capacity, improved sound level measurement instruments), further sociological research, and emerging technologies (new entrants to the National Airspace System (NAS) such as commercial space) might make the use of additional or

Some Federal agencies supplement DNL analysis on a case-by-case basis to characterize specific noise effects. Supplemental analyses use various metrics, including the cumulative metric Leq (Equivalent Sound Level) for varying representative time periods; and the single event metrics. SEL (Sound Exposure Level), Lmax (A-weighted Maximum Sound Level), Third Octave Band Sound Pressure Levels (SPL), and TA (Time Above - expressed in minutes for which aircraft-related noise exceeds specified A-weighted sound levels).

Supplemental analyses are most often used to determine aircraft noise impacts at specific noise-sensitive locations, particularly in analyses of speech interference or sleep disturbance. Single event analysis is sometimes conducted to evaluate sleep disturbance and, less frequently, some speech interference, primarily at locations where the DNL is below 65 dB.

Generally, supplemental metrics are used to further analyze specific noise-sensitive situations. Because of the diversity of such situations, the variety of supplemental metrics available, and the limitations of individual supplemental metrics, the FICAN concluded that the use of supplemental metrics to analyze noise should continue to be left to the discretion of individual agencies. (FICAN 1992, §3.2)

⁶¹ See, for example a Defense Noise Working Group (DNWG) publication, *Improving Aviation Noise Planning, Analysis and Public Communication with Supplemental Metrics – Guide to Using Supplemental Metrics* (December 2009) including work referenced therein by FAA/NASA Center of Excellence for Aircraft Noise and Aviation Emissions Mitigation (PARTNER), and the Australian Department of Transportation and Regional Services on defining supplemental metrics, analyses, and communications methods has also occurred since the 1992 FICAN report.

⁶² Citation for the work undertaken in Australia referenced in the 2009 DNWG *Guide to Using Supplemental Metrics* and referred to in Footnote 51 is: Department of Transport and Regional Services (Australia). 2000.

different metrics for disclosing environmental impacts in a manner that is preferable to, and perhaps replaces the use of, DNL for this purpose. Researchers should consider collecting noise exposure data in a manner to enable evaluation of a broader range of potential noise metrics (i.e., other than A-weighted) through such techniques as making sound recordings/*.wav files).

It is anticipated that new supplemental metrics might be developed as part of the ongoing and future research efforts in the topics areas mentioned above (§4.1 through §4.6). Instead of continuing to expand the variety and quantity of supplemental metrics, FICAN believes that the future research should focus on developing guidance on using existing supplemental metrics – for example when and how the supplemental metrics should be used (or not used). There are still significant gaps in agreement among key stakeholders regarding, among other things, the readiness and effectiveness of many existing supplemental metrics. A comprehensive evaluation of the supplemental metrics is needed for each application category in terms of their effectiveness and readiness. Successes and lessons learned from using the metrics should be compiled as well. Then recommended practices should be developed on the proper use of the metrics that are considered mature enough for wide applications. However, until such time as such a comprehensive evaluation were to occur, and consensus among the several agencies were achieved, FICAN finds the original 1992 recommendation that individual Federal agencies retain discretion in whether and how supplemental metrics are employed remains sound. However, additional periodic review and research is required to ascertain their continuing validity.



City of Tacoma
WASHINGTON



July 16, 2020

The Honorable Pramila Jayapal
United States House of Representatives
1510 Longworth House Office Building
Washington, DC 20515

Dear Representative Jayapal,

As our communities and our country continue to respond to the COVID-19 pandemic, we want to thank you for your bipartisan support for downstream fish passage at Howard Hanson Dam. Your hard work and leadership have already produced results – the Corps of Engineers identified funding in their fiscal year 2020 work plan for Howard Hanson fish passage related studies.

Together, we represent hundreds of thousands of Washington residents that appreciate your commitment to this regionally-significant project that will enhance fish populations, improve drinking water supplies, and contribute to the restoration of Southern Resident Orcas.

We greatly appreciate our leaders coming together in a bipartisan way to find solutions to the problems that we face. We look forward to working with you to complete fish passage at Howard Hanson Dam.

Thanks for your tremendous leadership!

Signed,

Dow Constantine
County Executive
King County

Bruce Dammeier
County Executive
Pierce County

Victoria Woodards
Mayor
City of Tacoma

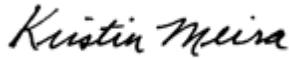
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Cc: Jennifer Chan, Office of Representative Pramila Jayapal
Col. Alexander Bullock, Commander, USACE-Seattle District
Barry Thom, Regional Administrator, NOAA-West Coast Region