

Subcommittee on Environment and Energy | MINUTES

Meeting date & time *March 25-26, 2014*

Meeting location *Airlines for America, Washington D.C.*

Purpose	E&E Subcommittee Guidance & Review for FY 2016 R&D Budget
Facilitator	Jim Hileman, DFO
Note taker	Jim Hileman
Timekeeper	Jim Hileman

Minutes from Meeting

Presentation *What's New in AEE* | **Presenter** *Curtis Holsclaw*

Discussion: In terms of personnel, Levent Ileri is the new CLEEN Program Manager. He comes from the FAA Next Generation Organization (ANG). Julie Marks is the acting Deputy Director of the International Office (API). As a result, Kevin Welsh is acting as the Division Manager for the Policy and Operations Division and Pat Moran is acting as the Senior International Advisor. We are looking to hire a new person for our Policy and Operations Division to help with market based measures.

In terms of budget outlook, we look good for FY14 but there are concerns in FY15 and FY16.

Noise continues to be an issue with considerable congressional attention. Aircraft noise has always been a concern for our office. Helicopter noise is becoming an issue in certain areas. We see emerging concerns with noise from commercial space and UAVs.

We continue to develop a basket of measures to address climate change including the ICAO CAEP CO2 standard, market based measures.

We continue to have close collaboration with EPA. We had a face-to-face scheduled but that was cancelled due to snow storm.

In terms of rulemaking, we published Stage 3 helicopter noise standard. We have initiated efforts to promulgate ICAO Chapter 14 noise standards which will be known as the Stage 5 standard.

Presentation *CAEP & Global Market Based Measure (MBM) Update* | **Presenter** *Lourdes Maurice*

Discussion: We have a goal of getting to a decision for a CAEP CO2 standard in Feb 2016. We also hope to make progress on Particulate Matter.

ICAO is also pursuing a global market based measure as a gap filler to meet CO2 goals. The US hosted a meeting in early March on this matter. The US is putting in considerable effort to

support the development of this effort. The FAA will keep the subcommittee up to date on this work as we move forward.

ICAO Counsel have created a strawman concept to examine MBM and to use it as the basis for discussion and debate within the Environmental Advisory Group (EAG). It is the beginning of the process and provides a way forward to 2016. This process is providing suggestions on offsetting schemes and how a global MBM could work. Two elements have been handed to CAEP for examination: Monitoring Reporting Verification (MRV) and Carbon Unit Quality.

Presentation Plans for Future Summer Subcommittee Meetings | Presenter *Dennis Filler*

Discussion: The world is changing faster than the five year time frame that is currently built into the REDAC schedule of looking three years out (FY16+). This leads to several questions:

- How can we make the FAA more proactive instead of reactive?
- How could we use the summer REDAC meeting to help us find the areas that are not currently being covered so we could influence matters?

Dennis is interested in having 15% of the FAA RE&D budget be applied to near-term problems and not have it be ear-marked to individual BLIs. Dennis would like to use the REDAC subcommittees to provide advice for how this money could be spent.

This is being prompted by the need to ensure FAA are funding items that are not currently being covered and doing it in the near term. For example, do we need to do more work on the following:

- Commercial space. FAA allocates \$1M for this right now. Is this sufficient?
- UAV is not being covered adequately
- Could additive manufacturing be used somehow to advance aviation
- Use of fuel cells in general for propulsion

Dennis is looking for discretionary R&D to cover things that we had not covered for our long-term planning. He is looking for more RE&D funds to cover this – he does not want to take this from existing RE&D funds. He is looking for input from the Summer REDAC meeting to identify areas that could be covered by these funds.

There was discussion to leverage the fundamental research being conducted by other agencies (e.g., NASA) and to have the FAA work on developing an ability to conduct certification by analysis. A subcommittee member noted that this is exciting from a researcher's perspective but it is very different from what this Subcommittee does. If input is needed for this from the Subcommittee, then a smaller group could form within the Subcommittee to help develop this. Juan Alonso is willing to lead this small group.

Presentation Previous REDAC Recommendations / Actions| Presenter *Jim Hileman*

Discussion: The subcommittee closed all recommendations from the Spring 2013 meeting. It closed all but one recommendation from the Summer 2013 meeting. Recommendation #6 remains open. The FAA was asked to work with stakeholders on the development of its new fuel

efficiency metric and to provide a briefing on the development of a fuel efficiency goal and metric at the Summer 2014 meeting.

Action items (from Previous Meetings)	Person responsible	Deadline
Update the CLEEN one page fact sheet to include latest successes and industry implementation (if possible). Determine additional means of conducting outreach on CLEEN and its successes.	Levent Ileri	August 2014
Create ASCENT fact sheet for sharing with community	Jim Hileman	August 2014
Revise Noise Roadmap based on input from meeting	Rebecca Cointin	August 2014
Capture optimistic, realistic, and pessimistic cases within the goals analysis as opposed to a single scenario for the future	Chris Dorbian	August 2014
Consider adding a subcommittee member that provides FAA ATO/ANG perspective (NAS-Ops REDAC member perhaps) as well as NATCA	Jim Hileman	August 2014
Provide a briefing on the development of a fuel efficiency goal and metric at the Summer 2014 meeting.	Jim Hileman	August 2014

Presentation Budget Update | Presenter Mike Gallivan

Discussion: Mike presented budget numbers and language from the FY14 budget including information on the \$8M increase to environment and energy budget. He also presented the President's budget request for FY15. The RE&D budget level falls in line with historical levels which have it as being between 1 and 2% of the total FAA budget. FAA are going to a new structure for funding F&E that is based on portfolio. As such, items were moved around to match the portfolios – this includes a budget line item relating to environment. Debt ceiling and sequestration are not issues for FY15 budget. Sequestration could be an issue for FY16 budget. FY16 budget will be submitted to OST in early June 2014 and OMB submission will occur in early Sept 2014. Scheduled data of FY16 budget presented to Congress in Feb 2015.

Current authorization goes through FY2015. FAA has started work on its proposed revision.

JPDO work has been absorbed into ANG. Talks are ongoing to see how this will be fully worked out.

Presentation FY16 Program Proposal | Presenter Jim Hileman

Discussion: Jim gave an overview of the Environment and Energy Research Portfolio and the FY16 program proposal. The briefing noted reductions in funding which are anticipated in FY15 and FY16. Jim also presented a multiple-year above target funding request with a \$5M request for FY16 to support aircraft technology maturation via the CLEEN program and the advancement of alternative jet fuels. The briefing concluded with how AEE are prioritizing their research given coming cuts.

The Subcommittee expressed concerns about the large reductions in F&E funding and its impacts on AEE research on operations research and tool development.

The Subcommittee feels that AEE research programs are leveraging funds well – public-private partnerships are doing this very well – PARTNER, ASCENT, CLEEN are all terrific evidence of this. The Subcommittee is very supportive of how AEE have prioritized their research and the Subcommittee “strongly supports” the above target request.

Presentation Noise Research Update | Presenter Rebecca Cointin

Discussion: Becky updated the noise research roadmap and new work for FY14 in AEE and ACRP. Research roadmap was very useful to moving projects forward.

A member of the subcommittee expressed concern that aviation research being done by ACRP could be better done by AEE. Other committee members that represent airlines noted that it is better to have the work done by ACRP instead of not being done at all as AEE does not have sufficient budget to do everything.

There was discussion around research on the health impacts of noise and the FAA noted they are directing people to the NoiseQuest page to educate people who are expressing concern about aviation noise.

A Subcommittee member commented that Becky is doing very good work to develop the roadmap and conduct survey. The FAA will reach out to ACI and selected airports after it gets through review with OMB/BTS on the survey. That should happen in late spring/early summer

Presentation Emissions Research Update | Presenter Ralph Iovinelli

Discussion: Ralph presented on several key efforts in AEE.

He started with a discussion on the development of an international standard for measuring emissions of non-volatile particulate matter. Ralph said that ICAO CAEP is evaluating what can be accomplished to create an international non-volatile particulate matter standard by Feb 2016 (CAEP/10 meeting) and by Feb 2019 (CAEP/11 meeting).

He covered the air quality research within FAA. The subcommittee was complimentary of the efforts at UNC and MIT to place aviation in context of other sectors.

He discussed ongoing climate work. He showed an APMT-Impacts Climate result that demonstrates how ACCRI research has reduced uncertainties in terms of the climate impact from aviation. He presented ongoing work to estimate regional impacts of climate change due to aviation operations. There was a comment that it is important to reduce uncertainties, but FAA also needs to understand that there is diminishing returns in reducing uncertainties and that some uncertainties may not be reducible as they extend beyond aviation.

He presented ongoing work to examine the surface air quality impacts from cruise emissions. The research effort is using 6 different models with consistent assumptions across the board to better understand the science involved.

Presentation NextGen EMS - Update on Stakeholder Collaboration Program |
Presenter *Don Scata*

Discussion: Don presented on the Stakeholder Collaboration Program within the NextGen EMS effort.

One of the subcommittee members noted that the FAA should be very careful in how they refer to this program as there is no EMS for all of aviation. We can call our part of this an EMS but we should not imply that there is an overarching EMS for all of aviation.

Based on interest from earlier in the day, Don presented information on the NextGen Environmental Collaboration website. These are backup slides in his slide deck.

Presentation Tools Update | **Presenter** *Mohan Gupta*

Discussion: Mohan walked through the work that we are doing to develop analysis tools. He went into detail on AEDT and how we are leveraging the PDARS data stream to do our work. He finished with a slide outlining our FY14 activities.

There was some discussion about AEDT2a and the release of Service Pack 2 which fixed errors that could have impacted the evaluation of planned OAPM analyses (https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/oapm/). Jim H noted that the work to create Service Pack 2 could result in a delay of the AEDT2b release but FAA are doing our best to avoid this.

One of the subcommittee members asked about similar efforts in Europe on tool development. Mohan mentioned the TeamPlay effort.

Presentation Goals Analysis Update | **Presenter** *Chris Dorian*

Discussion: Chris presented progress in estimating future CO2 emissions, energy efficiency, and noise. He gave a refresher on what was done previously with CO2 as the example. He walked through the plans for the Spring 2014 re-run and the longer term plan for work.

There was discussion about how the work can inform technology development as it is showing a gap between the FAA and industry goals for aviation CO2 emissions. There was a desire from one member to see historical data as well as the future trends. Another member wanted to ensure that the work was able to identify the technology gaps that could fill the CO2 gap. While there is considerable interest in the work, the only new action item is to add historical perspective to the data being presented.

Action items	Person responsible	Deadline
Provide historical perspective to future projections as possible.	Chris Dorian	August 2014

Presentation CO2 Analysis Update | Presenter Laszlo Windhoffer

Discussion: Laszlo gave an update of the work that has been ongoing to support the development of the ICAO CAEP CO2 standard. The Subcommittee was very complimentary of these efforts.

Presentation Operations Research Update | Presenter Chris Dorian

Discussion: Chris presented the operations research roadmap with a focus on the cruise altitude and speed optimization analysis, delayed deceleration approach analysis, and N collaborative surface control efforts including plans for the coming New York demonstration.

During the discussions, there was a question about what is happening at Denver in terms of operations and how that fits into the DDA concept. We later determined that Denver is implementing RNP. There was also discussion surrounding the DDA Human in the Loop (HITL) experiments with the Subcommittee being supportive of the work.

The Subcommittee members were very complementary of the CASO, DDA, N-control efforts and would like to see this work continue as it shows good promise.

A Subcommittee member requested that the Operations Research Roadmap cover future years. The Subcommittee thinks we are getting great results from our Operations Research and they need to continue. There was discussion of finding a way to use RE&D funds to complement F&E to ensure this work continues. There was further discussion on the potential gap between developing new operations and their implementation by the FAA.

One of the Subcommittee members would like to see how the operations pieces fit together. This is something that could be worked into the Goals Analysis effort.

Presentation Aircraft Tech – CLEEN Update and CLEEN II Status | Presenter Levent Ileri

Discussion – Levent presented update of progress in maturing technologies within the CLEEN program. There was agreement on the importance of continued collaboration between NASA and CLEEN. One of the Subcommittee members requested a roadmap of the CLEEN program with expected EIS.

As CLEEN I comes to a close, there will be a question about the benefit of CLEEN relative to the expenses that were incurred. Further, what was accomplished that would not have happened if there was no CLEEN funding. A Subcommittee member recommended that we develop these information.

There was agreement that FAA needs to communicate the positive results from CLEEN and that industry needs to help with this. As an example, there was heavy coverage for the ecoDemonstrator work including the cover of Aviation Week.

Jay noted that ERA will come to an end in December 2015

Action items	Person responsible	Deadline
Develop CLEEN communication materials. Capture	Levent Ileri	August 2014

Action items**Person responsible Deadline**

what has been accomplished with the funds that have been invested in CLEEN, including anticipated EIS dates.

Presentation NASA Update | Presenter Jay Dryer

Discussion: Jay presented on NASA's recent restructuring of their aeronautics program and how they developed their overarching strategy. The result is a program with four programs: Airspace Operations and Safety Program, Advanced Air Vehicles Program, Integrated Aviation Systems Research, and Transformative Aeronautics Concepts Program. The Subcommittee members were complimentary of the presentation and the restructure. Jay will be heading up the Advanced Air Vehicles Program and John C will be heading up the Airspace Operations and Safety Program.

The Subcommittee had a discussion about how NASA and FAA work collaboratively on technology development. As has been the case since the outset of CLEEN, NASA will focus on lower TRL technology maturation that is not industry specific and FAA will focus on higher TRL with an emphasis on technology maturation with transition to industry. All were in agreement that there is great collaboration between FAA and NASA.

Presentation Alt Fuels Update | Presenter Nate Brown

Discussion: Nate presented an overview of the alternative jet fuels research that is being conducted by FAA. He walked through efforts on testing and emissions measurements; analysis of economic costs of production and environmental impacts of fuel use; and coordination including CAAFI and the Farm to Fly 2 effort. He finished with a slide that outlines FY14 efforts.

There was a question about how FAA are structuring their efforts to support testing in the near term to support the existing C/Q process and to improve the C/Q process with the AFRL along the lines of the Rules and Tools program. The Subcommittee was very appreciative of the FAA carrying on the AFRL Rules and Tools program. They are also very happy with the overall efforts of the FAA on alternative jet fuels.

Action items**Person responsible Deadline**

Provide a briefing during August meeting on testing to support existing C/Q process. Presentation should include high level description of the coordination that is taking place on this front.	Nate Brown	August 2014
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Provide a briefing during August meeting on how we improving the C/Q process through the AFRL Rules and Tools program	Mohan Gupta	August 2014
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Share AFTOT briefing with DOE and USDA	Jim Hileman	March 31 2014
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Presentation DoE Update | Presenter Zia Haq

Discussion: Zia presented DOE efforts on alternative jet fuels. This included their integrated biorefinery projects and their support of the Defense Production Act with US Navy and USDA. There was discussion about how the three agencies are working together to support fuel production via DPA. Zia finished with some of the outcomes of the recent Gas-Biomass to Liquids workshop.

Presentation USDA - Alt Jet Fuels Efforts | Presenter Harry Baumes

Discussion: Harry presented on USDA efforts on alternative jet fuels. He discussed Title IX of the Agricultural Act of 2014 which covers energy. He followed with information on USDA research efforts including the NIFA AFRI CAP efforts at Washington State and U. Washington (among others). He also discussed collaborative efforts including those with EPA, Farm-to-Fleet, the joint USDA/DOE Biomass Research and Development Initiative (BRDI) which has had its funding reduced considerably, Farm-to-Fly 2, CAAFI, MASBI, etc. He noted that these efforts are a national priority. He went into more detail on Farm-to-Fly 2 and CAAFI and how USDA are involved with the CAAFI state initiatives. Harry offered to share more information on their research efforts if anyone on the Subcommittee wants it.

Presentation EPA | Presenter Sharyn Lie

Discussion: Sharyn is the Director of the Climate Economics and Modeling Center within the Office of Transportation and Air Quality within EPA. Her office is in charge of the life cycle greenhouse gas assessment for the Renewable Fuel Standard (RFS2) program. Renewable jet fuels can be used to generate RINs but jet fuel users are not obligated parties to purchase RINs. There is a petition process for parties to get their fuels included within the RFS2 program. She thinks that jet fuel represents a great option for helping EPA meet its goals. There have been changes to the petition process to try to make it better and these have been posted onto the website.

Sharyn is very interested in knowing which fuels and feedstocks are approaching ASTM approval so that EPA is prepared.

Action items	Person responsible	Deadline
Share ASTM approval progress with Sharyn's office at EPA.	Nate Brown	August 2014

Presentation NAJFS | Presenter Mohan Gupta

Discussion: Mohan presented progress in the development of a national alternative jet fuel R&D strategy that is providing the coordinated R&D plan for the U.S. Federal Government. A Subcommittee member noted a desire to ensure that this document is followed by the agencies who are involved in its creation.

Action items	Person responsible	Deadline
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Action items	Person responsible	Deadline
Have a briefing that summarizes progress on NAJFS with a high level summary of funding being spent on alternative jet fuel development.	Mohan Gupta	August 2014

General Discussion | Lead *Steve Alterman*

Steve led the Subcommittee in a discussion that led to its Findings and Recommendations.

Action items	Person responsible	Deadline
Use consistent metrics across the board to evaluate improvement in fuel burn	J. Hileman	August 2014

Subcommittee Discussion of Open Recommendations (Discuss status of FAA response and decide to close or remain open)

All but one of the recommendations from the March and August 2013 meetings were closed. The remaining recommendation will be discussed at the August 2014 meeting.

Next Meeting – Date/Location/Agenda Items to be Included

August 26-27 in Washington DC – location TBD

Adjourned at 4:00 pm on Wednesday, March 26, 2014

Attendance and meeting agenda are captured in the attached documents

Attendees:

REDAC Subcommittee Members:

Mr. Steve Alterman (chair)
Mr. Juan J. Alonso
Mr. Jay E. Dryer
Dr. Rudy Dudebout
Ms. Jennifer Duke
Mr. Charles L. Etter
Dr. Steven Hamburg
Mr. Mahendra C. Joshi
Ms. Sandra Lancaster
Dr. Dimitri Marvis
Ms. Susan M. Presti
Ms. Katherine B. Preston
Mr. Ian Redhead
Ms. Leslie L. Riegle
Mr. Claudio H. Ternieden
Ms. Nancy Young
Mr. Darcy Zarubiak
Dr. Joseph Zelina

Others:

James Hileman (DFO)
Julia Nagy
Gloria Dunderman
Gregg Fleming
Lourdes Maurice
Mohan Gupta
Gina Ronzell
Rebecca Cointin
Ralph Iovinelli
Curtis Holsclaw
Chantee Whitney
Dennis Filler
Jim Skalecky
Levent Ileri
Chris Dorbian
Laszlo Windhoffer
Don Scata
Zia Haq
Harry Baumes
Sharyn Lie
Nate Brown
Mike Gallivan

**FAA REDAC Subcommittee on Environment & Energy
Spring 2014 Meeting Agenda**

Airlines for America - 1301 Pennsylvania Avenue NW, Suite 1100 - Washington DC

Dial-in Information (no webex will be available)

Telephone number: 1-888-850-4523

Passcode: 566565#

Read Ahead Materials: <http://reacdb.faa.gov/browse.cfm>

Tuesday, March 25, 2014

Time	Duration Title	Presenter
8:00 0:30	Check-In / Continental Breakfast	
8:30 0:05	Welcome	N. Young
8:35 0:10	Chair opening statement & Introductions	S. Alterman / M. Joshi
8:45 0:15	What's new in FAA & AEE	C. Holsclaw
9:00 0:15	CAEP & Global Market Based Measure Update	L. Maurice
9:15 0:30	Plans for Future Summer Subcommittee Meetings	D. Filler
9:45 0:15	Responses to REDAC Recommendations / Actions	J. Hileman
10:00 0:15	Break	
10:15 0:30	FY14/FY15 Budget Update	M. Gallivan
10:45 0:45	FY16 Program Proposal (including COE update)	J. Hileman
11:30 0:30	Discussion	
12:00 1:00	Lunch	
13:00 0:45	Noise Update	R. Cointin
13:45 0:15	Discussion	
14:00 0:45	Emissions Update	R. Iovinelli
14:45 0:15	Discussion	
15:00 0:15	Break	
15:15 0:15	Tools Update	M. Gupta
15:30 0:10	NextGen EMS – Update on Stakeholder Collaboration Program	D. Scata
15:40 0:20	Goals Analysis Update	C. Dorbian
16:00 0:30	CO2 Standard Analysis Update	L. Windhoffer
16:30 0:30	Discussion	
17:00	End of Day-1	

Wednesday, March 26, 2014

8:00 0:30	Continental Breakfast	
8:30 0:45	Operations Research Update	C. Dorbian
9:15 0:15	Discussion	
9:30 0:30	Aircraft Tech – CLEEN Update & CLEEN II Status	L. Ileri
10:00 0:15	Break	
10:15 0:45	NASA Update	J. Dryer
11:00 0:15	Discussion	
11:15 0:30	Alt Fuels Program Update	N. Brown
11:45 0:30	DOE briefing on Alternative Jet Fuels Efforts	Z. Haq
12:15 0:45	Lunch	
13:00 0:30	USDA briefing on Alternative Jet Fuel Efforts	H. Baumes
13:30 0:15	EPA briefing on Alternative Jet Fuel Efforts	S. Lie
13:45 0:15	National Alternative Jet Fuel Strategy Update	M. Gupta
14:00 1:30	Discussion	
15:30 0:30	Summary of Action Items and Findings & Recommendations	
16:00	End of Day-2	