

Summary of Testimony of
Annie Petsonk, International Counsel, Environmental Defense Fund (EDF)
before the Committee on Commerce, Science, and Transportation, U.S. Senate
June 6, 2012

Hearing on the European Union Emissions Trading System (EU ETS) and S. 1956, a bill to give the Secretary of Transportation authority to prohibit U.S. air carriers from participating in the EU ETS, and direct the Secretary to ensure that U.S. carriers are held harmless

The EU ETS is the world's largest program to limit global warming pollution. Its emissions caps cover some 12,000 large stationary sources. Its carbon market has mobilized over 80% of the \$140 billion annually that global carbon markets are putting into emissions-cutting technologies and processes.¹ Elected officials in Europe decided to bring aviation into the ETS in a modest, reasonable way, and that has been the main engine of recent progress in the International Civil Aviation Organization (ICAO) toward a global measure. An ICAO measure, or in its absence, the ETS's modest program, can generate much-needed jobs here in the U.S. producing low-carbon aviation technologies, improve local air quality, and reduce our dependence on foreign oil. S. 1956 would upend this progress and trigger billions of dollars in unfunded mandates for U.S. taxpayers. The Senate should not pass S. 1956.

A modest, reasonable program... While aviation is not the largest source of greenhouse gases, the sector's global warming pollution is slated to increase dramatically. Aviation is "one of the fastest growing sources of emissions."² It's already the second-largest emissions grouping covered by the EU ETS (after electric power generation).³ Aviation emissions from international flights almost doubled from 1990 to 2006.⁴ Emissions from flights into and out of the United States are predicted to grow by about 75% by 2020 compared with 2005 levels.⁵ Without policy intervention, emissions from aviation globally are expected to quadruple by 2050.⁶ Currently, premature deaths caused by airplane pollution are estimated to increase by 6 times by 2025.⁷ By driving improvements in fuel efficiency, we also ensure that aviation can continue to grow while also protecting public health.

After a dozen years of discussion without action in ICAO, elected officials in Europe decided to jumpstart the process by enacting modest caps on the emissions of flights coming in and out of their airports. The law gives airlines great flexibility to choose when, where and how to meet their caps. It allows them to purchase emissions allowances from European governments, but gives them a much wider array of choices so that no airline need spend a dime on this program that goes into European government coffers. Unlike U.S. voluntary programs, the EU law

¹ State and Trends of the Carbon Market (World Bank 2011).

² Congressional Research Service, Aviation and the European Union's Emission Trading Scheme, March 7, 2012, at 5.

³ http://ec.europa.eu/clima/policies/transport/aviation/faq_en.htm.

⁴ Group on International Aviation and Climate Change (GIACC) Report, ICAO, 2009, http://www.icao.int/environmental-protection/GIACC/GIACCReport_Final_en.pdf, at 7.

⁵ EDF calculation, based on *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2010* (USEPA April 2012), <http://epa.gov/climatechange/emissions/usinventoryreport.html>) (historical emissions data); *FAA Aerospace Forecast: Fiscal Years 2012-2032* (FAA 2012), http://www.faa.gov/about/office_org/headquarters_offices/apl/aviation_forecasts/aerospace_forecasts/2012-2032) (forecasts); and *Aviation and Emissions: A Primer* (FAA 2005), http://www.faa.gov/regulations_policies/policy_guidance/envir_policy/media/aeprimer.pdf (fuel efficiency improvements).

⁶ D. McCollum, G. Gould, and D. Greene, *Greenhouse Gas Emissions from Aviation and Marine Transportation: Mitigation Potential and Policies* (Pew Center on Global Climate Change 2009), <http://www.pewclimate.org/docUploads/aviation-and-marine-report-2009.pdf>, at 14.

⁷ Aircraft Impacts on Local and Regional Air Quality in the United States, PARTNER Project 15 final report, Ratliff et al, October 2009, Report No. PARTNER-COE-2009-002 at 44; Schlenker, Wolfram & Walker, W. Reed, "Airports, Air Pollution, and Contemporaneous Health," NBER (Dec. 2011) at 29, 30.

stimulates good old-fashioned competition to get results as cost-effectively as possible. The benefits of the program are significant - comparable to taking 30 million cars off the road each year by 2020. The costs are minimal, according to U.S. FAA-supported studies,⁸ and savvy carriers can earn a profit. Airlines argue that the law intrudes into our sovereignty, but it is less intrusive than many U.S. laws and regulations that intrude into other nations' sovereignty. The law has been upheld by Europe's highest court as fully consistent with international law, and no one has found differently. Absent an effective global solution, reasonably managing the problem now, as EU elected officials have done, before the problem gets bigger, makes sense.

...that helps boost jobs and energy security here at home. Aviation is a major employment generator. Participating in the EU ETS, or in a program under ICAO auspices, can generate jobs here at home. The industry has shown that it can make strong technical strides and transfer those to other sectors. For example, modern jet engines can fly planes, generate electricity and move ships more efficiently, saving energy and reducing dependence on imported oil. But improvements in aircraft fuel efficiency have stalled over the last twenty years.⁹ To maintain our lead in an era of growing global concern over climate change, America's aviation sector must focus on low-carbon development. Many technologies are available. Voluntary efforts help, but are not sufficient. A target focuses the industry like nothing else.

...while spurring progress in ICAO. If there's anything on which the Obama administration, Europeans, industry and environmentalists agree, it's that this issue is best tackled by a global program under ICAO auspices; that ICAO is finally starting to get serious; and that the real driver of progress in ICAO has been the advent of the EU-ETS. We believe that ICAO can reach agreement by the end of next year (2013) on a non-discriminatory framework of market-based measures that achieves more emissions reductions than the EU ETS, and we would be happy to share with the Committee our thoughts on how ICAO can do so. But rather than increasing ICAO's chances for reaching such an agreement, S. 1956 would turn U.S. airlines into scofflaws and upend progress at ICAO. The Senate should instead require regular reports to it on ICAO's progress. If by the end of 2013 ICAO has not reached agreement, the Senate should consider steps that don't involve S. 1956's **unintended adverse consequences for aircraft operators and for U.S. taxpayers.**

The EU law, like the U.S. Clean Air Act acid rain trading program signed into law in 1990 by President George H.W. Bush, pairs caps on emissions with broad flexibility in how to comply with those caps, and backstops the caps with tough penalties for any emitter that fails to tender sufficient emissions allowances. Were the Secretary, under S. 1956, to prohibit U.S. operators from participating, then the operators would be liable for billions of dollars in emissions penalties. By directing the Secretary to ensure that airlines are held harmless, S. 1956 makes airlines into scofflaws, and makes the government - and by extension, U.S. taxpayers - responsible for bailing the airlines out of the consequences. Those are policies that our economy can ill afford. We therefore urge the Senate not to pass S. 1956.

⁸ Robert Molina et al., The Impact of the European Union Emissions Trading Scheme on US Aviation, 19 Journal of Air Transportation Management 36-41, 2012

⁹ A New Flight Plan: Getting Global Aviation Climate Measures Off the Ground (Transport & Environment, Environmental Defense Fund, The International Council on Clean Transportation and the Aviation Environment Federation, February 2012) (hereinafter "New Flight Plan") at 10, <http://www.transportenvironment.org/sites/default/files/media/Aviation%20Conference%20Background%20Report.pdf> (accessed June 3, 2012).

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Good morning Mr. Chairman and distinguished members of the Senate Committee on Commerce, Science, and Transportation.

Thank you, Chairman Rockefeller, for your invitation to provide the views of Environmental Defense Fund on the European Union Emissions Trading System (EU ETS), its expansion to cover the emissions of flights landing at and taking off from EU airports, and S. 1956, a bill that would give the Secretary of Transportation authority to prohibit U.S. air carriers from participating in the EU ETS, and that would direct the Secretary of Transportation to ensure that U.S. carriers so prohibited are held harmless from any consequences of their non-participation.

My name is Carol Annette (Annie) Petsonk, and I am international counsel at the Environmental Defense Fund, EDF. EDF is a leading national nonprofit organization representing more than 800,000 members. Since 1967, we have linked science, economics and law to create innovative, equitable and cost-effective solutions to society's most urgent environmental problems. We are guided by scientific evaluation of environmental problems, and by the recognition that common-sense economic tools can tap human ingenuity powerfully in combining environmental protection and economic well-being.

I am honored to have had the opportunity to provide counsel on these kinds of approaches in my career at EDF, and prior to that, at the U.S. Department of Justice and the Office of the U.S. Trade Representative in the administrations of Presidents Bill Clinton and George H.W. Bush, as well as legal representation of a range of private companies and substantial experience in the developing world.

I come to aviation issues having grown up with a father who was a pilot and an engineer, who during World War II helped develop the first reversing propeller for the blimp. Our dad gave my brothers and me a love of flight and a great appreciation for the innovative engineers who make flight possible and who improve it continually. One of the Boy Scouts my father mentored became an avionics industry leader, inventing

among other things the static discharger which you see on the trailing edge of most aeroplane wings. One of those dischargers sat proudly in our living room for many years.

Later, after I moved to Washington DC, on one of my frequent visits to family in Morgantown, West Virginia, I had the opportunity to go with my father to an antique air show at Hart Field. Taking a test flight in an open cockpit biplane of the type my father flew (a Stearman) gave me renewed admiration for him and the other pilots of the time, who performed incredible aerobatic maneuvers in planes that you could literally fall out of, who risked and gave their lives in the sky every day. It also gave me greater appreciation of the advances in aviation in what is, in the human scheme of things, an incredibly short time.

Today I am honored to be invited to present the views of the Environmental Defense Fund on the European Union's Emissions Trading System for aviation,¹ its potential costs and benefits, its competitiveness effects, and S. 1956, proposed legislation addressing the ETS.

Background. First, a word of background on the EU ETS and the aviation emissions it has been extended to address.

- The EU ETS is the world's largest program to limit global warming pollution.
- Its emissions caps cover some 12,000 large stationary sources.
- Its carbon market makes up over 80% of the more than \$140 billion annually that carbon markets have mobilized in emissions-cutting technologies and processes.²
- While the system has had some notable growing pains, overall it is succeeding in bringing emissions down, driving technology change, and

¹ Directive 2008/101/EC of the European Parliament and of the Council of 19 November 2008 (Official Journal of the European Union L 8/3, 13 January 2009) amending Directive 2003/87/EC so as to include aviation activities in the EU ETS ("the EU law").

² State and Trends of the Carbon Market (World Bank 2011) (hereinafter "State and Trends") at 9.

focusing innovation on low-carbon development, even during recessionary times in Europe,³ with minimal impact on competitiveness.⁴

The global warming impacts of aviation emissions have been a subject of concern since at least 1994.⁵ While aviation is not the largest source of greenhouse gases, the sector's global warming pollution has grown rapidly and is slated to increase dramatically in the years ahead. The U.S. Congressional Research Service calls aviation "one of the fastest growing sources of emissions."⁶ It's already the second-largest emissions grouping covered by the EU ETS (after electric power generation). Aviation emissions from international flights almost doubled from 1990 to 2006.⁷ As Chart 1 on edf.org/aviation/testimony indicates, emissions from flights into and out of the United States are predicted to grow by about 75% by 2020, compared with 2005 levels.⁸ Without limits, emissions from aviation globally are expected to quadruple.⁹ Moreover, aviation's global warming impact may be even greater given the other gases

³ State and Trends at 41; see also Frank Watson, "EC CO₂ data shows that EU carbon trading is working: analysts," EU Energy, April 11, 2011, available at <http://www.platts.com/NewsFeature/2011/emissionsdata/index> (accessed 04/24/12); and see Denny Ellerman, Frank Convery, and Christian de Perthuis. *Pricing Carbon* (Cambridge Press 2010); see also European Commission, "Climate change: Progress report shows EU on track to meet or over-achieve Kyoto emissions target." Press Release, Brussels, November 12, 2009, <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/1703&format=HTML&aged=0&language=EN&guiLanguage=en> (accessed June 3, 2012); and see Emissions trading: annual compliance round-up shows declining emissions in 2011, <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/12/477> (accessed June 3, 2012).

⁴ "Europe's emissions trading forum has 'tiny' impact as companies prepare for auctions", ClimateWire Dec. 9, 2010, available at <http://www.eenews.net/public/climatewire/2010/12/09/1> (access April 2012). For prospective analyses, see McKinsey and Company and Ecofys, "EU ETS Review: Report on International Competitiveness," European Commission, December 2006, available at http://origin.mckinsey.com/client-service/sustainability/pdf/Report_on_International_Competitiveness.pdf (access April 2012), and Julia Renaud, "Industrial Competitiveness under the European Union ETS," IEA Information Paper, International Energy Agency, December 2004, available at http://194.245.121.74/fileadmin/gruppen/bdz/Themen/Umwelt/IEA-Studie_11-2004.pdf (access April 2012).

⁵ Oppenheimer, M. & Vedantham, A. (1994). *Aircraft Emissions and the Global Atmosphere*. EDF Special Report. New York: Environmental Defense Fund; see also Vedantham, A., & Oppenheimer, M. (1998). Long-term scenarios for aviation: Demand and Emissions of CO₂ and NO_x. *Energy Policy*. Vol. 26. No. 8.

⁶ Congressional Research Service, Aviation and the European Union's Emission Trading Scheme, March 7, 2012, at 5.

⁷ Group on International Aviation and Climate Change (GIACC) Report, ICAO, 2009, http://www.icao.int/environmental-protection/GIACC/GIACCReport_Final_en.pdf, at 7.

⁸ EDF calculation, based on *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2010* (USEPA April 2012), <http://epa.gov/climatechange/emissions/usinventoryreport.html> (historical emissions data); *FAA Aerospace Forecast: Fiscal Years 2012-2032* (FAA 2012), http://www.faa.gov/about/office_org/headquarters_offices/apl/aviation_forecasts/aerospace_forecasts/2012-2032 (forecasts); and *Aviation and Emissions: A Primer* (FAA 2005), http://www.faa.gov/regulations_policies/policy_guidance/envir_policy/media/aeprimer.pdf (fuel efficiency improvements).

⁹ See, e.g., Aviation and the Global Atmosphere, J.E.Penner, D.H.Lister, D.J.Griggs, D.J.Dokken, M.McFarland (Eds.), Intergovernmental Panel on Climate Change (Prepared in collaboration with the Scientific Assessment Panel to the Montreal Protocol on Substances that Deplete the Ozone Layer), Cambridge University Press, 1999 (hereinafter "IPCC Special Report on Aviation"), Summary for Policymakers available at <http://www.ipcc.ch/pdf/special-reports/sprn/av-en.pdf> (accessed June 3, 2012); and see Commission of the European Communities. Summary of the Impact Assessment: Inclusion of Aviation in the EU Greenhouse gas Emissions Trading Scheme (EU ETS). 2006.

emitted by planes flying at high altitudes, and given the contrail clouds formed by aviation pollution.¹⁰

In addition to greenhouse gases, airplanes emit a wide range of pollutants, including carbon monoxide, sulfur and nitrogen oxides, VOCs, and even toxic air pollutants.¹¹ Pollution from aircraft causes hundreds of premature deaths each year.¹² Those impacts are particularly severe in Southern California.¹³ Takeoffs and landings are associated with increased concentrations of ultrafine particulates, pollutants not regulated by EPA, in areas close to airports.¹⁴ In addition, carbon monoxide emissions for aviation have been found to have significant impacts on asthma, respiratory, and cardiac health in populations living near airports.¹⁵ As aviation continues to grow, and the population exposed to airplane pollution ages and grows, the health effects from aircraft pollution are expected to increase by as much as 6 times by 2025.¹⁶ To ensure that aviation does not become a growing health problem, we must find ways of reducing emissions. Airplanes cause pollution when they burn fossil fuels – policies that drive improvements in fuel efficiencies bring the added benefit of reducing exposure to health-harming and toxic pollutants from aircraft.

The Parties to the United Nations Framework Convention on Climate Change (UNFCCC), including the United States, began considering as early as 1995 ways to address the global warming pollution from aviation. At their first meeting of the Conference of the Parties, the UNFCCC's Subsidiary Body on Scientific and Technological Advice (SBSTA) initiated a discussion on greenhouse gas emissions from the aviation and maritime sectors.¹⁷ In 1996, SBSTA, in which all UNFCCC

¹⁰ See Meeting the UK Aviation target – options for reducing emissions to 2050 (UK Committee on Climate Change, December 2009), <http://www.theccc.org.uk/reports/aviation-report>.

¹¹ FAA, Aviation and Emissions: A Primer, 2005.

¹² Aircraft Impacts on Local and Regional Air Quality in the United States, PARTNER Project 15 final report, Ratliff et al, October 2009, Report No, PARTNER-COE-2009-002 at 44.

¹³ *Id.*

¹⁴ Hsu et al, 328 50 Atmosphere Environment (2012).

¹⁵ Schlenker, Wolfram & Walker, W. Reed, "Airports, Air Pollution, and Contemporaneous Health," NBER (Dec. 2011) at 29, 30.

¹⁶ Levy et al, "Current and Future Particulate-Matter-Related Mortality Risks in the United States from Aviation Emissions During Landing and Takeoff", 32 Risk Analysis 237 (2012).

¹⁷ See Environmental Defense Fund, The Long Road Toward Reducing Greenhouse Gas Emissions from Aviation (hereinafter "The Long Road"), http://www.edf.org/sites/default/files/EU_aviation_ETS_timeline.pdf (accessed June 3, 2012). See also A New Flight Plan: Getting Global Aviation Climate Measures Off the Ground (Transport & Environment, Environmental Defense Fund, The International Council on Clean

Parties, including the U.S. and the EU, participate, considered eight different methodologies for accounting for the emissions of flights traveling between different countries.¹⁸ The eighth option was to account for the emissions based on a "sovereignty" approach, with responsibility for emissions occurring in the airspace of any particular sovereign resting with that sovereign. In discussing this option, the Parties agreed that it would lead to perverse results: the emissions of a flight would "belong" to a nation simply because the vessel had transited that nation's airspace, even though the flight had never landed in the country. Pollution from flights passing through airspace over the high seas would be "orphaned." Because of the "orphan emissions" and perverse results problems, SBSTA formally dropped from consideration the eighth option – i.e., the airspace-based methodology. In 1998, the Climate Treaty's supreme body, namely the Conference of the Parties to the UNFCCC (including the United States), endorsed SBSTA's decision,¹⁹ rejecting the airspace-based methodology.

In 1997 the Climate Treaty Parties adopted language stating that industrialized nations "shall" pursue limitation and reduction of these emissions in ICAO.²⁰ In the ensuing years, ICAO has been unable to reach agreement on an effective mechanism for addressing these emissions.²¹

After a decade of discussion without action in ICAO, elected officials in Europe in 2008 decided to start by enacting modest caps on the emissions of flights coming in and

Transportation and the Aviation Environment Federation, February 2012) (hereinafter "New Flight Plan"), <http://www.transportenvironment.org/sites/default/files/media/Aviation%20Conference%20Background%20Report.pdf> (accessed June 3, 2012), at pages 13-14.

¹⁸ See FCCC/SBSTA/1996/9/Add.1, paras. 27-30.

¹⁹ See Report of the Subsidiary Body for Scientific and Technological Advice on the work of its Fourth Session, Geneva, 16-18 December 1996, Item IV B.2 Conclusions, Endorsed by the UNFCCC Conference of the Parties at its Third Session, see UNFCCC COP Decision 2/CP.3, reprinted in FCCC/CP/1997/7/Add.1 (25 March 1998) at page 31. The ICAO has also effectively rejected the airspace-based methodology. In 2004, the ICAO Executive Committee asked ICAO to provide guidance for ICAO Contracting States on incorporating emissions from international aviation into the States' emissions trading programs. In so doing, the ICAO Executive Committee specified that the guidance be "consistent with the UNFCCC process." See www.icao.int/icao/en/assembl/a35/wp/wp352_en.pdf at page 15-30. So, as a practical matter, ICAO has also rejected the "sovereign airspace" approach, since the UNFCCC Parties have rejected it. Resuscitating the "sovereign airspace" methodology now, as some in industry have suggested, would contravene decisions of both the UNFCCC and ICAO and lead to the same perverse results and orphan emissions that led the UNFCCC to reject it a decade and a half ago.

²⁰ See Kyoto Protocol on Climate Change, Article 2.2.

²¹ See The Long Road, supra, for a summary of ICAO activities .

out of their airports, bringing aviation emissions under the EU ETS. This year, 2012, is the first year that aviation's emissions caps have come into effect under the EU law.

It is important, in understanding the EU law, to know which emissions are covered by the system and which are not. As Chart 2 on edf.org/aviation/testimony indicates, approximately 62% of all aviation emissions globally are from international flights, i.e., flights between two sovereign nations.²² Approximately half of those involve landings or takeoffs from EU airports.²³

Importantly, the EU law gives airlines great flexibility to choose when, where and how to meet their caps. It allows them to reduce emissions within their operations, and to tender special aviation emissions allowances, over 80% of which they receive for free from European governments. It allows them to purchase more allowances at auction from those governments, but it also allows them full flexibility to purchase any emissions allowances valid in the larger EU ETS. This includes allowances from power plants, cement companies, the chemicals, steel, and other manufacturing sectors – basically, any of the roughly 12,000 installations covered by the system. And it allows them to tender valid emissions credits earned in projects in the developing world, focusing on the least developing and poorest countries.

The EU law notes that all EU Member States are Contracting Parties to the Chicago Convention on Civil Aviation and members of ICAO, and that the EU Member States continue to support work in ICAO to develop market-based instruments to

²² International share of global emissions: ICAO. 2010. *Environmental Report 2010*. Available at http://www.icao.int/environmental-protection/Documents/Publications/ENV_Report_2010.pdf

²³ Domestic share of Intra-EEA emissions: analysis based on domestic emissions from UNFCCC National Inventory Submissions (available at http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/6598.php) and projected total EEA emissions using growth projections used in EC's SEC(2006) 1684 *Impact Assessment of the inclusion of aviation activities in the scheme for greenhouse gas emission allowance trading within the Community* (http://ec.europa.eu/clima/policies/transport/aviation/docs/sec_2006_1684_en.pdf)

Intra-EEA emissions and international cross-EEA boundary emissions: analysis based on EC's SEC(2006) 1684 *Impact Assessment of the inclusion of aviation activities in the scheme for greenhouse gas emission allowance trading within the Community*

EU ETS scope as share of global emissions: Lee, David S. 2012. *Aviation and Climate Change: Impacts and Trends*. (Presentation at conference "A New Flightplan – Getting Global Aviation Climate Measures" at Norway House, Brussels, Belgium, February 7.) Available at http://www.transportenvironment.org/sites/default/files/media/David_Lee_presentation.pdf

address the climate change impacts of aviation. The EU law requires, and EU officials have reiterated, that if ICAO adopts measures that are more environmentally effective than the EU ETS, the EU will review its law.²⁴

It is true that a number of European member states have, as a matter of principle, been unwilling to forgo the power of the purse and earmark any governmental revenues raised from this system exclusively for addressing climate change. Their reluctance mirrors the general unwillingness of the U.S. Congress to earmarks. What's important to understand about this aspect of the system is that *no airline participating in the ETS need send a dime into European government coffers if it doesn't want to*. And if it does want to ensure that any dime so spent will be dedicated to addressing climate change, it can preferentially purchase allowances from the German Government, which has so earmarked any revenues it receives from the auction of aviation emissions allowances. According to existing German legislation, all revenues from auctioning of allowances, including aviation allowances, go directly into the Energy and Climate Fund and are dedicated by law to climate purposes around the globe.²⁵

While the ETS emissions caps for aviation are modest – a 3% reduction from a 2004-2006 baseline in 2012, the first year, and a 5% reduction for the years 2013-2020 – the benefits of the program are significant: comparable to taking 30 million cars off the road each year through 2020.²⁶ The law challenges airlines to move beyond the efficiency gains that occur simply because aviation fuel costs money, and the law achieves reductions greater than what the industry has voluntarily proposed through the International Air Transport Association (IATA) (see Chart 3 on edf.org/aviation/testimony). Because the EU law is so flexible, and because it stimulates good old-fashioned competition to get results as cost-effectively as possible, the costs

²⁴ Jos Delbeke's speech during the conference "A New Flightplan - Getting global aviation climate measures off the ground," European Commission, February 7, 2012, http://ec.europa.eu/clima/news/articles/news_2012020701_en.htm

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http://www.bundesfinanzministerium.de/nr_3380/DE/BMF_Startseite/Aktuelles/Aktuelle_Gesetze/Gesetze_Verordnungen/005_a.templateId=raw.property=publicationFile.pdf; <http://www.bmu-klimaschutzinitiative.de/en/news>.

²⁶ Commission of the European Communities. Summary of the Impact Assessment: Inclusion of Aviation in the EU Greenhouse Gas Emissions Trading Scheme (EU ETS). 2006.

are minimal.²⁷ In fact, according to an FAA-supported study by the Massachusetts Institute of Technology,²⁸ the cost to U.S. carriers is forecast to be no more than \$3 per transatlantic segment. As Chart 4 on edf.org/aviation/testimony illustrates, such a cost is a tiny fraction of the overall price of the ticket. It is less than a fifth of the tax that the United States government levies on each passenger arriving or departing from the U.S. on an international flight. It's less than half the cost of a beer on a domestic U.S. flight. And it's a small fraction of the amount airlines are charging for baggage these days.

Moreover, it's our assessment, and the assessment of other experts, from Bloomberg to Deutsche Bank, that at \$3/segment, U.S. carriers can make money on the system.²⁹ Overall, emissions in the EU are substantially below capped levels, due in part to the success of the ETS, and due in part to the recession. Consequently, prices in the EU carbon market are extremely low. US carriers hiked their transatlantic segment fares by \$3 within hours after the MIT study went up on the web. If savvy carriers use those fare increases to purchase allowances in the carbon market today, they can potentially turn environmental compliance into a profit center. Plus, the free allowances awarded to participating airlines constitute a significant new asset. So, far from predictions of doom and gloom from the carriers' participation in the ETS, the fact is that the ETS can encourage them to fly more efficiently and make money doing so.

Further, the most responsible and forward-looking business jet companies are seeking not only to comply with the EU ETS but to do *better*, because it's their philosophy and responsive to customer demand. A primary exemplar of this is Ohio-based and Berkshire Hathaway-owned NetJets, whose European operations have pledged to become 100% carbon neutral by October 2012.³⁰

²⁷ Cite to Sam Grausz/CAP/Climate Advisers study

²⁸ Robert Molina et al., The Impact of the European Union Emissions Trading Scheme on US Aviation, 19 Journal of Air Transportation Management 36-41, 2012

²⁹ See www.edf.org/aviation and sources cited therein.

³⁰ NetJets Environment Update Report UK Final Version, 4.

Nonetheless, U.S. airlines argue that the EU law intrudes into our sovereignty. That's not the case. To argue that a nation's authority to address the emissions of a flight landing or taking off from its airports extends only to its sovereign airspace, ignores the fact that the flight only occurs because travelers wish to fly to or from that country. If the flight never took off to go to that country, then none of the emissions would occur. But the entire emissions of the flight occur precisely because the flight is going to that country.

The Aviation Directive does not dictate behavior outside of EU territory. It simply holds airlines accountable for their emissions, and it uses total distance flown as a metric to determine each aircraft's emissions. The FAA itself measures emissions this way for purposes of calculating the international aviation emissions of the United States. ICAO does too for the purposes of its own carbon offset program.³¹ And while the U.S. arrival and departure tax, which applies to the entire continuum of flight (in fact, arriving passengers pay the tax at the point of their departure in the foreign jurisdiction), uses a flat fee, many nations' international arrival and departure levies are explicitly calculated on the basis of distance.³² Moreover, limiting a sovereign's authority to regulate flight emissions only to the country in whose sovereign airspace they occur, would lead to a regulatory patchwork with some gaping holes over the high seas.³³

The EU ETS is non-discriminatory. It provides a level flying field for all airlines flying the same routes. In fact, U.S. carriers are slated to receive a slightly higher percentage of their allowances for free than European carriers overall. So to the extent there is any competitiveness issue in the law, it redounds in favor of the U.S. carriers.

Moreover, the ETS exempts from its coverage flights arriving in Europe from nations that have adopted equivalent measures. Far from imposing its regulations on other countries, the EU system invites them to promulgate equivalent regulations. It

³¹ Conversation with FAA; <http://www.icao.int/environmental-protection/CarbonOffset/Pages/default.aspx>

³² Nations as diverse as India and the United Kingdom maintain differential levies on international flights based on distance flown.

³³ This would also contradict the long-ago rejection by ICAO of airspace-based methodology, *supra* note 19

appears from news reports that a number of countries, including China, are considering doing just that.

To those who claim the ETS intrudes in U.S. sovereignty, it's worth noting that the ETS is far less intrusive than many U.S. laws and regulations that intrude into other nations' sovereignty. The U.S. has many such laws in a range of fields, from financial regulation to criminal law, from national security law to human rights. In the aviation field alone, the history of U.S. unilateral extraterritorial regulation is substantial. For example, following the tragedy of the September 11, 2001 attacks, the U.S. unilaterally imposed a suite of extraterritorial security regulations on all flights coming into the United States. These included requiring reinforced cockpit doors,³⁴ limiting liquids and gels,³⁵ adding U.S.-run checkpoints in foreign airports, and performing onsite security assessments of foreign airports. Many of these measures were first implemented unilaterally, and only subsequently were they ratified through bilateral air services agreements and ICAO.

More recently, the FAA has promulgated a rule requiring airlines operating in the U.S. to retrofit fuel tanks on their planes, regardless of the carriers' nationality.³⁶ These rules apply to all aircraft landing at or taking off from U.S. airports, regardless of the citizenship of the carrier.³⁷ While the industry has argued for exemptions from these rules, arguing that the rules could create distortions between and among airlines depending on the type of aircraft flown,³⁸ the industry has not raised any issue of discrimination on the basis of citizenship of the carrier – even though the FAA's rules apply to all flights landing in and departing from US airports. The fuel tank rules apply throughout the continuum of flight. They require foreign as well as U.S. airlines to retrofit their planes if they wish to maintain their certificates of airworthiness.

³⁴ William Karas and Carol Gosian, Recent U.S. Regulation of Foreign Airline Practices: Impermissibly Unilateral or Not?, *Air and Space Lawyer*, 2002

³⁵ 3-1-1 Gains International Acceptance, TSA, June 5, 2007, available at http://www.tsa.gov/press/happenings/311_intl_acceptance.shtm. The U.S. implemented a liquids and gels rule in 2006, and while the EU shortly followed suit, ICAO did not approve liquids and gels guidelines until 2007.

³⁶ 14 CFR Section 121.1117.

³⁷ *Id.*

³⁸ <http://www.airlines.org/Pages/Gilligan-FRM-Letter.aspx>

The airlines may argue that a degree of intrusion into national sovereignty is acceptable where security is concerned. It should be kept in mind, however, that global warming is a security issue deserving of no less attention than aviation security as that is conventionally conceived. As Secretary of Defense Leon Panetta stated just four weeks ago, "In the 21st century, the reality is that there are environmental threats that constitute threats to our national security," and this reality forms the strategic framework for how the military thinks about and is acting on long-term environmental and energy issues.³⁹ It should for the civil aviation industry as well.

The EU ETS has been upheld by Europe's highest court as fully consistent with international law, and no one has found differently.⁴⁰ In the absence of a more effective global solution, managing this environmental security problem in a reasonable, affordable way, now, before it gets much bigger, makes sense.

Bringing aviation into the EU ETS can also be a pro-growth move. Aviation is a major employment generator.⁴¹ Participating in the EU ETS, or in a program under ICAO auspices, can generate jobs here at home, as experience in other nations has demonstrated.⁴² The industry has shown that it can make strong technical strides and transfer those to other sectors. In 2009, the FAA estimated that the aviation industry supports 10.2 million jobs and contributed \$1.3 trillion in total economic activity.⁴³ The single largest share of U.S. exports in 2009 was civilian aircraft, engines, equipment and parts, comprising \$75 billion.⁴⁴ Five states have aircraft-related manufacturing industries topping \$10 billion, and in California the figure tops \$25 billion. And the United States dominates global aviation manufacturing: Boeing's planes represent 75% of the

³⁹ "Panetta links environment, energy and national security in groundbreaking speech," Annie Snider, E&E reporter, Thursday, May 3, 2012.

⁴⁰ See, e.g., In significant victory, Europe's highest court upholds EU law that curbs aviation pollution, EDF Blog, Dec. 21, 2011, at <http://blogs.edf.org/climatetalks/2011/12/21/european-court-of-justice-decides-eu-aviation-directive-legal/>

⁴¹ See The Economic Impact of Civil Aviation on the U.S. Economy, U.S. Department of Transportation Federal Aviation Administration (December 2011).

⁴² See, e.g., German Federal Environmental Ministry, "Renewably employed: Short and long-term impacts of the expansion of renewable energy on the German labour market," July 2011, at 5 and 42, available at http://www.germany.info/contentblob/3179136/Daten/1346894/BMU_RenewablyEmployed_DD.pdf, accessed April 2012.

⁴³ http://www.faa.gov/air_traffic/publications/media/FAA_Economic_Impact_Rpt_2011.pdf at 1.

⁴⁴ http://www.faa.gov/air_traffic/publications/media/FAA_Economic_Impact_Rpt_2011.pdf at 11.

global fleet;⁴⁵ Pratt and Whitney's engines are on 30% of the global fleet.⁴⁶ Rockwell Collins has introduced its Ascend flight information solutions product to help airlines comply with EU ETS reporting requirements;⁴⁷ Universal Aviation has a similar reporting product that guides U.S. operators through the registration and reporting process and helps reduce fuel consumption through sophisticated monitoring software.⁴⁸ Reducing emissions from aviation means increased demand for new aircraft bodies and engines, for more efficient ground-based power systems at airports, for new software that allows airlines to track their fuel usage and find ways to reduce idling, and technologies that are currently only on the drawing board. This demand in turn creates new skilled jobs and increases economic output.

But the ETS, or a similar system under ICAO auspices, is needed because voluntary programs simply aren't getting the job done. Improvements in aircraft fuel efficiency have stalled over the last twenty years. The International *Council on Clean Transportation (ICCT)* has found that "Since 2000 [aviation] fuel efficiency has remained flat on a seat-km basis and improved only 0.29% annually on a ton-km basis," a conclusion corroborated by research by the Dutch Aerospace Laboratory (NLR), which has found that the last piston powered aircraft (Lockheed Super Constellation and Douglas DC-7) of the late 1950s were as fuel efficient as today's modern aircraft.⁴⁹ In fact, as Chart 5 on edf.org/aviation/testimony illustrates, "fuel price alone has failed to continuously promote new aircraft efficiency since 1960."⁵⁰ To maintain our lead in an era of growing global concern over climate change, America's aviation sector must focus on low-carbon development. Many technologies are available. Voluntary efforts help, but are not sufficient. A target focuses the industry like nothing else.

Crafting that target under ICAO auspices makes sense, and it is do-able. In fact, if there's anything on which the Obama administration, European administrations, the industry and environmentalists agree, it's that this issue would be best tackled by a

⁴⁵ <http://www.boeing.com/companyoffices/aboutus/brief.html>

⁴⁶ http://www.pw.utc.com/about_us/assets/pw-overview.pdf

⁴⁷ http://www.rockwellcollins.com/sitecore/content/Data/News/2011_Cal_Yr/CS/FY11CSNR36-EU_RTS.aspx

⁴⁸ <http://www.universalweather.com/aviation-emissions/eu-ets/>

⁴⁹ New Flight Plan, supra, at 9.

⁵⁰ New Flight Plan, supra, at 9.

global program under ICAO auspices, and that ICAO is finally starting to look at the issue seriously. It is surely no coincidence that serious discussions at ICAO would finally occur in tandem with the advent of the EU-ETS.

We believe that ICAO can reach agreement by the end of next year (2013) on a non-discriminatory framework of market-based measures that achieves more emissions reductions than the EU ETS, and we would be happy to share with the Committee our thoughts on how ICAO can do so. But rather than increasing ICAO's chances for reaching such an agreement, S. 1956 would turn U.S. airlines into scofflaws and upend progress at ICAO. The Senate should instead require regular reports to it on ICAO's progress. If by the end of 2013 ICAO has not reached agreement, the Senate should consider steps that don't involve S. 1956's **unintended adverse consequences for aircraft operators and for U.S. taxpayers.**

It's important for this Committee to consider carefully those unintended consequences. The EU law, like the U.S. Clean Air Act acid rain trading program signed into law in 1990 by President George H.W. Bush, pairs caps on emissions with broad flexibility on how to comply with those caps, and backstops the caps with tough penalties for any emitter that fails to tender emissions allowances to cover its emissions. Were the Secretary to exercise his authority under S. 1956 to prohibit U.S. operators from participating, then aircraft operators, under EU law, would be liable for billions of dollars in emissions penalties. While, as discussed above, the cost of compliance for aircraft operators with the EU ETS is minimal, and for the most efficient operators, compliance could turn into a profit center, non-compliance with the EU ETS has the potential to be extremely costly.

Under the EU law, carriers that do not tender, by April 30th of each year, emissions allowances sufficient to cover their actual emissions in the prior year, will automatically be subject to a penalty of \$125 per ton. And they will still be liable for their emissions.

That such penalties apply is very clear under the EU law. For example in February 2012, ExxonMobil was fined 3 million euros for failing to report carbon dioxide emissions from a Scottish chemical plant. ExxonMobil paid the fine.⁵¹ But if U.S. carriers don't pay the fines because they are prohibited from participating in the ETS, then under the national laws of nations implementing the ETS, their aircraft can be impounded and sold to pay the penalties.⁵² Moreover, the airlines could be liable for breach of any aircraft leases that contain (as is typical) clauses requiring the lessors to comply with the law of the jurisdictions in which they operate – and many commercial carriers lease at least some portion of their fleet.⁵³

Altogether, these penalties make non-participation in the EU ETS far more costly than compliance. We conservatively estimated the costs of non-participation for the five largest U.S. passenger airlines that fly to Europe - United, Continental (since merged with United), American, Delta, and US Airways. Together, they emitted almost 16 million tonnes of carbon dioxide on flights between the U.S. and Europe in 2010.^{54,55} Using the U.S. Federal Aviation Administration (FAA) official projections for aviation growth,⁵⁶ at today's exchange rate,⁵⁷ the financial liability of these carriers would be \$2 billion in 2012, growing to \$2.8 billion in 2020, and totaling \$22 billion for the 2012-2020 period.⁵⁸ Moreover, by imposing an enforceable duty - the statutory excess emissions penalty of \$125/tonne of emissions, enforced by the impound-and-sell authority - on U.S. carriers, S. 1956 would impose an unfunded private sector mandate far in excess of the \$142

⁵¹ <http://www.businessgreen.com/bg/news/2153536/exxonmobil-hit-record-eur33m-penalty-failing-report-co2>

⁵² See United Kingdom Statutory Instrument **2010 No. 1996, CLIMATE CHANGE: The Aviation Greenhouse Gas Emissions Trading Scheme Regulations (2010)**, http://www.legislation.gov.uk/ukSI/2010/1996/pdfs/ukSI_20101996_en.pdf, at PART 9, Detention and sale of aircraft.

⁵³ See, e.g., Watson, Farley & Williams Aviation Briefing 2011, available at [http://www.wfw.com/Publications/Publication938/\\$File/WFW-Aviation-EUETSEuropewide-2011.pdf](http://www.wfw.com/Publications/Publication938/$File/WFW-Aviation-EUETSEuropewide-2011.pdf).

⁵⁴ United Kingdom Department of Energy and Climate Change. Downloaded on January 11, 2012 from http://www.decc.gov.uk/en/content/cms/emissions/eu_ets/aviation/aviation.aspx

⁵⁵ German Emissions Trading Authority. 2012. *Allocation of Emission Allowances to Aircraft Operators for Trading Periods 2012 and 2013-2020*. Available at http://www.dehst.de/SharedDocs/Downloads/EN/Publications/Aviation_Allocation_report.pdf?__blob=publicationFile

⁵⁶ United States Federal Aviation Administration. 2012.

⁵⁷ 1.24 as of May 31, 2012, using Oanda's Currency Converter at <http://www.oanda.com/currency/converter/>

⁵⁸ In nominal terms at a constant exchange rate.

million threshold for such mandates under Section 7 of the Unfunded Mandates Reform Act (UMRA).⁵⁹ And if the legislation would impose a private sector mandate in excess of the UMRA threshold, then there should, at a minimum, be a qualitative and a quantitative assessment of costs and benefits anticipated from the Federal mandate (including the effects on health and safety and the protection of the natural environment).

Moreover, not only does S. 1956 provide authority to the Secretary of Transportation to prohibit an operator of a civil aircraft of the United States from participating in the EU ETS if the Secretary determines it to be in the public interest to do so, but also provides that "The Secretary of Transportation, the Administrator of the Federal Aviation Administration, and other appropriate officials of the United States Government *shall*, as appropriate, use their authority to conduct international negotiations and take other actions to *ensure that* operators of civil aircraft of the United States are held harmless" if the Secretary exercises his authority to ban their participation. So, S. 1956 presents a stark choice to the Secretary: if he imposes the ban, he either subjects the airlines to an unfunded mandate whose only resolution is either convincing the European Union and its member states to amend their laws, or, if the Europeans are unwilling to do so, he must pass the multibillion dollar liability to the U.S. taxpayer, bailing the airlines out of a problem that is of their own making.

In other words, S. 1956 sets the Secretary up to make U.S. airlines into scofflaws, visit a multi-billion dollar liability on them, and then somehow send the bill to U.S. taxpayers. Those are policies that our economy can ill afford.

⁵⁹ The UMRA provides: "(7) FEDERAL PRIVATE SECTOR MANDATE.—The term 'Federal private sector mandate' means any provision in legislation, statute, or regulation that—

“(A) would impose an enforceable duty upon the private sector except—“(i) a condition of Federal assistance; or “(ii) a duty arising from participation in a voluntary Federal program; or

“(B) would reduce or eliminate the amount of authorization of appropriations for Federal financial assistance that will be provided to the private sector for the purposes of ensuring compliance with such duty.

Moreover, should the U.S., by enacting S. 1956, encourage or require U.S. corporations to violate the laws of other nations, the good will of other nations may be less forthcoming in the future. Beyond aviation, this has implications for national security (the PATRIOT Act), financial regulations (antitrust law, Dodd-Frank, Sarbanes-Oxley, the FCPA, trademark law, tax evasion), criminal and human rights law (ATCA, Victims of Trafficking and Violence Protection Act, Controlled Substances Act), and other U.S. laws where the cooperation of other governments, and the participation of their firms, is crucial. Balking over the EU Aviation Directive is not worth the loss of comity in all of these other areas.

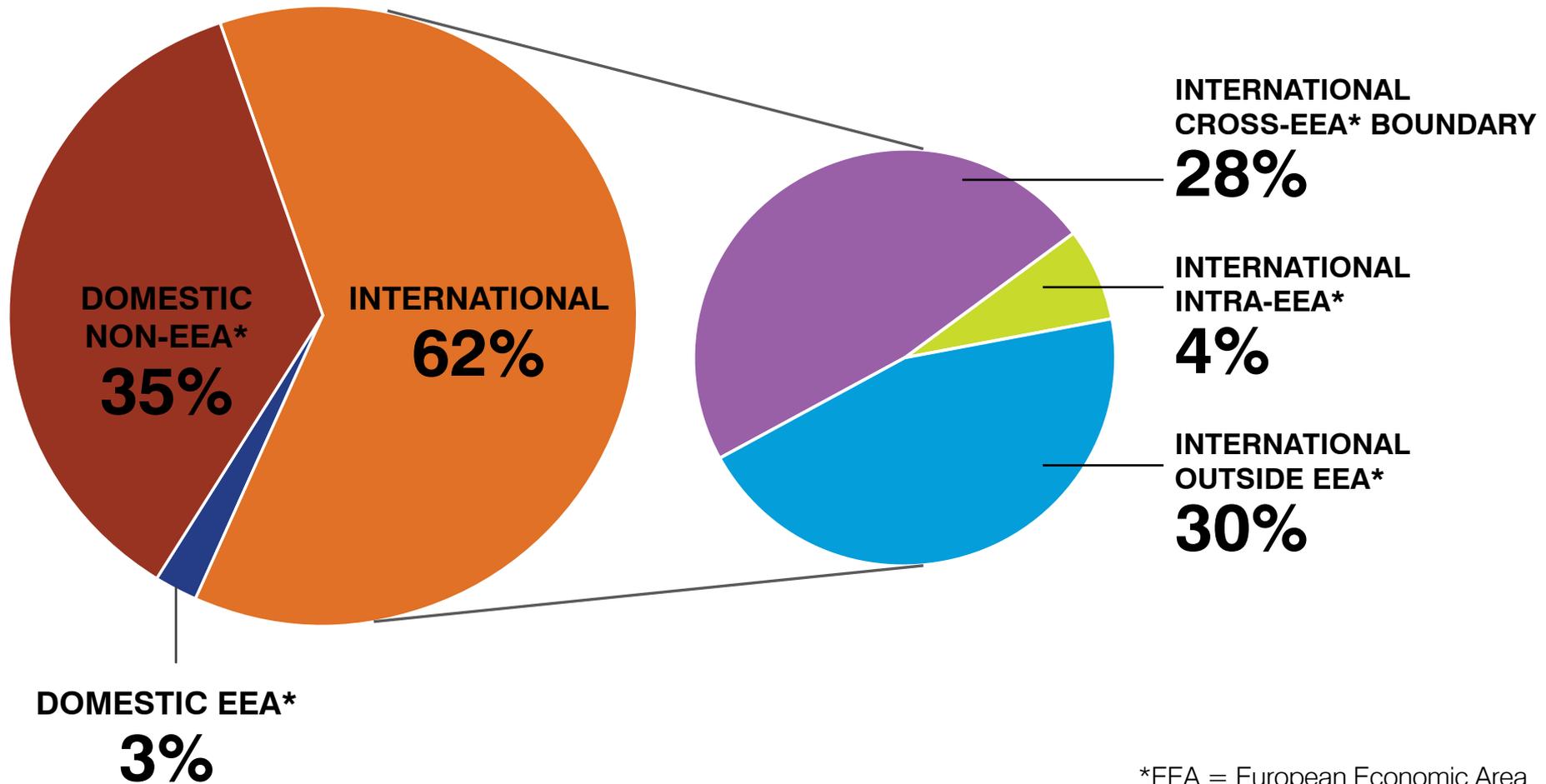
Mr. Chairman, while we continue to work in ICAO on an effective global framework for limiting global warming pollution from aviation, an objective we believe is achievable during 2013, the EU ETS makes a modest and reasonable start. Participating in it can drive technology innovation and job creation here at home, while cutting pollution and potentially opening new profit centers for airlines, or at least achieving these goals at minimal cost. The competitiveness impacts, if any, favor U.S. carriers over their European competitors. And the substantial unintended adverse consequences - for airlines and for American taxpayers - of enactment of S. 1956 call for extreme caution in considering that bill. Ultimately, the best option would be for the Secretary to negotiate a strong and effective framework in ICAO.

We hope this discussion will be of assistance to you and all the Committee members as you together undertake your consideration of how best to address the issue of global warming pollution from aviation, in the context of an interconnected and interdependent world. We thank you and all the Committee members for your careful consideration. We would be happy to answer any questions.

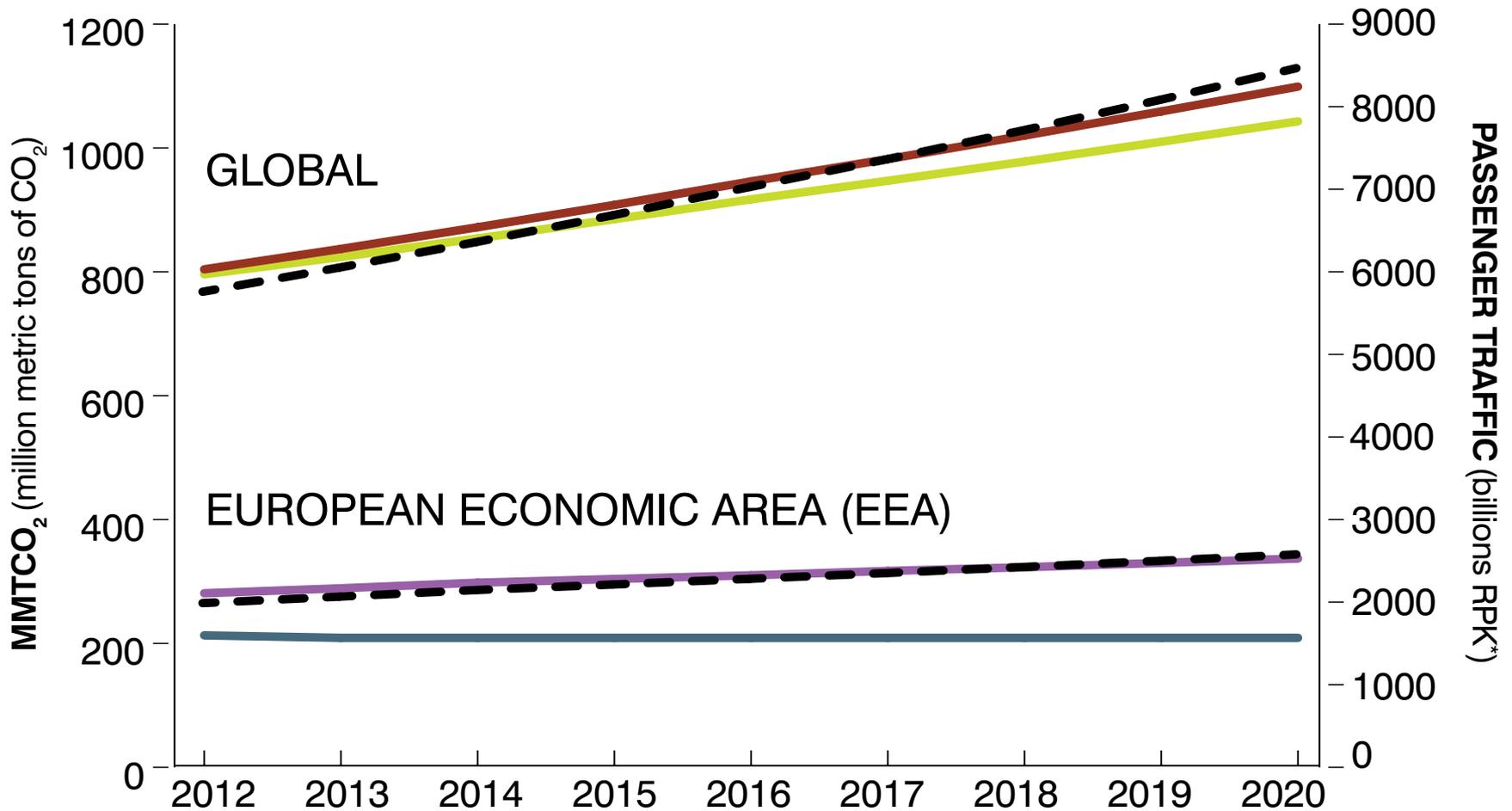
U.S. Aviation Emissions



Global Aviation Emissions



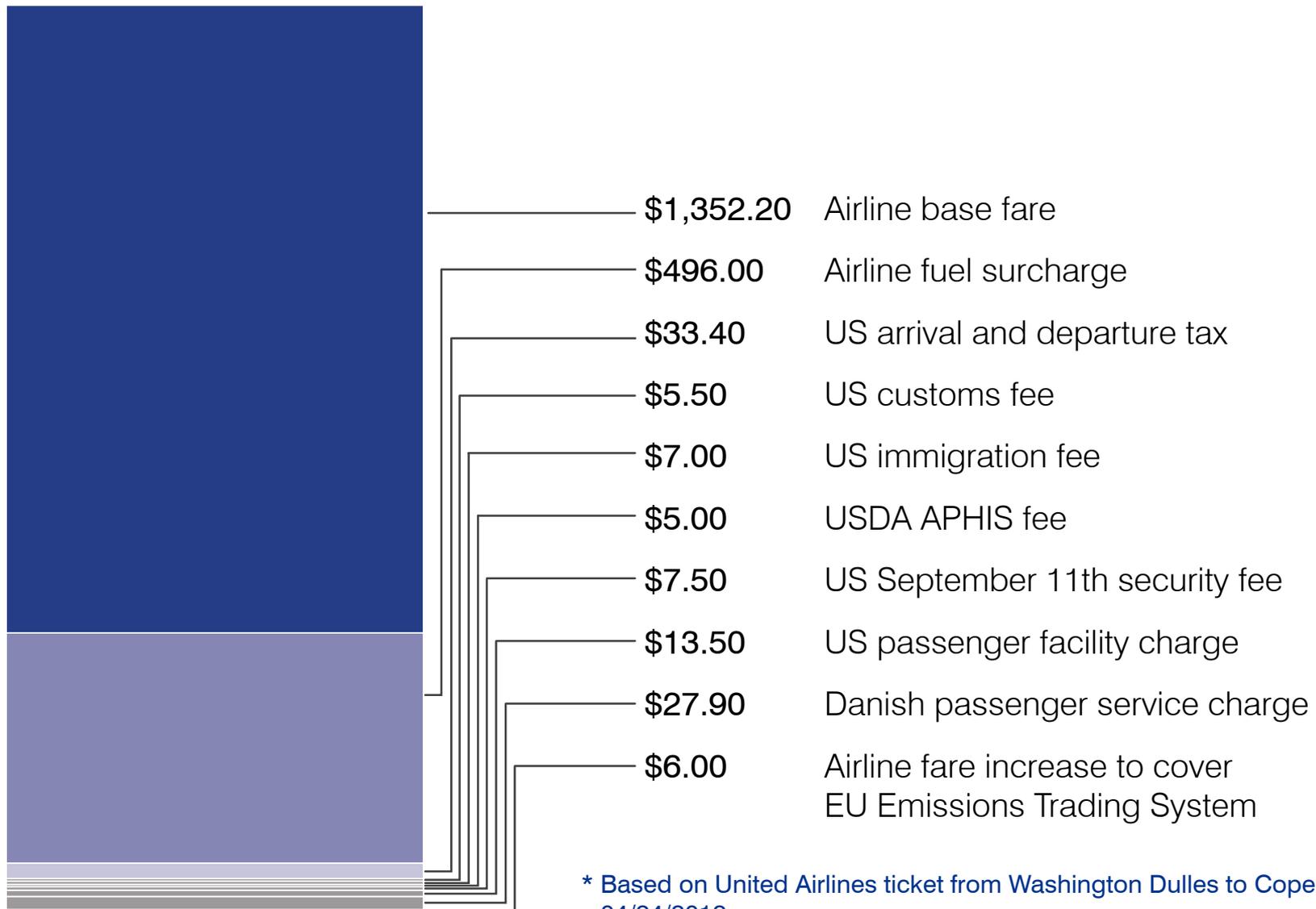
Aviation Emissions - Policy Scenarios



- Global emissions business as usual
 — EEA emissions business as usual
- - - * (RPK) Revenue Passenger Kilometer; 1 RPK = 1 paying passenger flying 1 kilometer
- IATA (International Air Transport Association) target
 — EEA emissions capped

Sources: United Nations Environment Programme; ICAO; International Air Transport Association; European Commission; Commission of the European Communities; Ernst & Young and York Aviation

Round-trip Airfare to Denmark*



* Based on United Airlines ticket from Washington Dulles to Copenhagen, 04/24/2012

Average fuel burn for new jet aircraft, 1960-2010

Fuel burn at specified range (1960 = 100)

