Boeing Submission

The National Aviation Policy Statement

Department of Infrastructure, Transport, Regional Development and Local Government

Company details

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1. Introduction

Boeing would like to thank the Minister for the opportunity to reply to the Aviation issues paper. Boeing has a long and proud history with Australian aviation. The first Boeing 707 ever exported from the USA was delivered to Qantas in 1959. This aircraft was restored with Boeing help and returned to Australia, now residing at the Longreach museum.

Australia is home to Boeing's largest presence outside of the United States. Two manufacturing sites operate in Melbourne and Sydney building aircraft components for the 787, 777, 737 and 747 in addition to parts for other major airframe manufacturers.

Boeing Australia Holdings Pty Ltd (BAH) situated in Sydney, NSW, co-ordinates Boeing Australia operations from east to west coasts. The chairman of the Board of Directors has oversight of the following subsidiaries:

- Alteon Training Australia Pty Ltd
- Boeing Australia Limited
- Hawker de Havilland Aerospace Pty Ltd
- Jeppesen Optimization Solutions Pty Ltd
- Jeppesen Australia Pty Ltd
- Phantom Works Australia

Boeing is also represented in Australia by:

- Aviall Australia Pty Ltd
- Boeing Commercial Airplanes
- Boeing Operations International
- Boeing International Corporation
- Jeppesen Marine

Through this presence, Boeing's contribution to the Australian economy is significant. Boeing Company directly employs some 4000 Australians at 28 sites, contributing about 0.045% of Australian GDP.

The Government's issues paper raises questions about many factors of the Australian aviation industry. Boeing has chosen to comment on specific areas which can be pursued to enhance efficiencies and enable sustainable growth.

2. Market outlook

Boeing forecasts good growth in the aviation industry over the next 20 years. The industry is one in which decisions must be made for the long term. Aircraft purchases and airport development require years to reach fulfilment. It is vital that government mirrors the same long term approach of the aviation industry.

Boeing forecasts 4.5% growth in passengers per annum over the next 20 years. By 2026 the world fleet will be 36,420 planes up from the current fleet of 18,230[1]. This will be driven by strong global economic growth which will become less dependent on the performance of the United States as the global economy becomes more diverse.

Growth in international markets provides opportunities for Australian industry. Airlines in the Oceania region have booked significant numbers of new airplanes orders to support expansion plans. By 2026, we believe the Oceania regional fleet will increase from 320 to 680 planes.

[1] Current Market Outlook 2007, Boeing

3. International services

Boeing believes that the liberalisation of airline traffic rights is highly beneficial for passengers. A more liberalised industry creates a more competitive environment, giving passengers more choices - through increased flight frequencies and more point-to-point travel. Giving passengers what they want is the foundation of Boeing's product strategy.

Australia has made great progress on liberalising rights with key aviation markets such as New Zealand, Britain, the United States and Singapore. Moving to the next level – granting and receiving "beyond" rights for flights from Australia to Asia, the Middle East, and the U.S. is a logical next step for the Government, given Australia's geographic position, and the increased technological capabilities of aircraft to fly greater distances more economically. More competition on these routes will drive increased trade and investment links for Australia, further propelling economic growth.

Countries which liberalise their aviation sector see not only increased air cargo and passenger flows, but also expanded trade, GDP growth, and foreign direct investment. Australia has great potential to further grow its economy by liberalising air services with other countries, and we encourage the government to continue moving in this direction.

4. Skills needs in the aviation industry

The continued strong growth of the Australian economy has seen skills pressures build in the aviation industry. As aviation is an important contributor to the Australian economy, the Government should support the aerospace industry by encouraging the next generation of workers to enter the industry and begin training.

It is important to encourage growth in pilot, engineering, science and trade skills. For pilots, the financial burden of obtaining a pilot's license is prohibitive to many. Boeing is facing shortages of specialist engineering and trade skills across our service business and aircraft manufacturing operations. Increased funding for universities and TAFEs for engineering and trade skills is vital to the industry. The increased funding should be used to increase the amount of graduates entering the industry and ensure that they have the high standard of training required to work effectively.

Clear government support for the industry to make it an attractive employment prospect by removing/minimising bureaucratic and financial obstacles would certainly be beneficial.

Boeing has been working to raise the profile of aviation as a career path for secondary and tertiary students. Engineering is often seen as a "hidden" profession and to combat this Boeing has been working jointly with the institutions such as the University of Queensland, Royal Melbourne Institute of Technology and Queensland University of Technology. Projects have included the Aerospace Schools project; joint funding of research through research and development collaborations including Co-operative Research Centres; sponsorship of high achieving students; and travel scholarships to visit Boeing operations overseas. Encouraging the industry to have greater interaction with educators would increase the exposure of potential students to the possible career options and the path to get them there.

5. Infrastructure and Planning

It is essential that land use planning be conducted in accord with policies and standards on a national level. This is especially true in accomplishing a balanced approach to noise mitigation, as called for in Appendix C of ICAO Assembly Resolution A35-5 of 2001. The ICAO balanced approach emphasises conducting a cost to benefits analysis of land use planning and noise abatement procedures to help mitigate the airport noise impact upon residents before resorting to local operating restrictions or source noise reduction. A good first step in strengthening co-operation is to include airlines and, if requested by airlines, manufacturers as technical advisors in the dialogue on land use planning.

A likely future need of any airport is to accommodate long term growth in capacity. History shows that new airplane types reduce airport noise exposure, reducing the size of the noise contours surrounding the airport. When this occurs, the temptation will be presented to permit the construction of homes and schools closer to the airport. This would tend to block the possibility of growth in airport capacity. We believe national, state, and local governments need to consider the long term airport capacity growth needs before permitting construction of housing and schools closer to the airport in the short term.

A long term approach needs to be taken in regards to airport planning. New development needs must be anticipated to avoid bottlenecks. Consultation with the community and appropriate development around airports will ensure their continued viability and centre of economic investment.

6. Air Traffic Management

Australia has been a leader in adopting and implementing technologies to provide a safe, secure and efficient air transportation system. Australia's leadership in this area is exemplified through its partnership with the FAA and

Boeing to leverage operational trials to ensure global interoperability. Boeing encourages Australia to continue its leadership role in transforming the air transport system and continue to work with other governments and industry to ensure global interoperability. There are a few key areas where Australia should continue to focus and build upon in transforming the system. However, it should be noted that full transformation is not achieved overnight and in the interim it will be important for Australia to take advantage of current capabilities that can provide benefits today.

Airservices Australia, with the agreement of the airlines, has commenced the roll-out of ADS-B services in its upper airspace to provide better tracking and less restrictive air traffic control separation standards for aircraft with suitable avionics. ADS-B is providing radar-like air traffic services across parts of the country where these services would not otherwise have been economically viable. Airservices Australia should build upon these efforts while working to fully utilise the capabilities of ADS-B, including air to air applications.

The Global Navigation Satellite System (GNSS) is another area where Australia has taken leadership. Qantas operated the first commercial flight to use satellite data for an approach to Sydney Airport in November of 2006. On April 19, 2007, the U.S. and Australia signed a joint statement on co-operation in the civil use of Global Positioning System and space-based positioning, navigation and timing systems and applications. Interoperability among existing and planned civil space-based navigation services will foster the creation of a truly international GNSS. The Federal Aviation Administration and Airservices Australia are also co-operating on the development and approval of Category I Ground Based Augmentation System (GBAS). They have agreed to meet annually to work towards improvements for the civil use of the GPS and regional augmentations to GPS. These activities are supported by industry, including Boeing. Airservices Australia should continue its work in this area and build upon the government and industry partnerships already created.

Airservices Australia has been working with Boeing, Qantas, Emirates and Singapore Airlines to develop tailored arrival procedures. Airservices Australia has helped with important research and development to support these procedures. It is now time to transition from the research and development stage to concrete implementation of tailored arrivals. Airservices Australia is developing plans to move towards implementation and we would encourage them to accomplish this goal by the end of 2009, beginning of 2010. This is a perfect example of the ability to augment current technologies and provide benefits from legacy systems today that will allow movement from transition to transformation of the air transport system.

Australia has also helped lead the way with Required Navigation Performance (RNP) trials and implementation. Qantas Airways participated in the first trials of RNP for approaches, landings and departures outside North America. In

addition, Qantas is only the third airline in the world to use RNP procedures within the terminal area. During the period between January 2007 and January 2008, over 200,000 kg of fuel was saved by using RNP approaches in Australia. Beyond the environmental benefits, RNP, along with the technology previously mentioned will offer a means to support greater capacity and less airspace congestion in crowded environments. Again, Australia's continued work in this area will allow for global benefits and is invaluable.

Finally, Australia should continue to focus on global interoperability. The Asia and South Pacific Initiative to Reduce Emissions (ASPIRE) offers a key opportunity to further that goal. This partnership between the FAA, Airservices Australia and Airways New Zealand will provide opportunities for development and implementation of NextGen supporting concepts and procedures. In addition, the partnership will encourage a stronger focus on the environmental benefits of transformational technology. The partners will need to work to guarantee full participation from other Air Navigation Service Providers, as well as the airlines and industry to maximise the value of ASPIRE. Australia should maintain this as a top priority moving forward and make sure the necessary resources are available to support its efforts and that ASPIRE becomes a reality.

Airservices Australia has an important role in the development and introduction of new technologies that will add to the safe, secure and efficient use of Australian skies and those globally. There are some key technologies that Australia has led the advancement on and we encourage them to continue to build upon those successes and leverage their experience in other regions of the world, including the U.S. At the same time, we applaud their efforts to show the benefits of existing technology through procedures like tailored arrivals which will allow for more immediate benefits.

7. Aviation Safety

Australia is a world leader in aviation safety. Boeing applauds the regulator's efforts in this important arena, and urges the Australian government to build on this foundation by boosting its regional and global role. To remain a leader in the rapidly expanding global aviation community, CASA would be wise to strengthen its involvement in ICAO despite Australia's geographical isolation. Because of its strong aviation tradition and broad expertise, Australia is highly respected and has a considerable contribution to make. Other rapidly developing aviation states are increasing their presence and involvement in ICAO; their interests are not always aligned with those of Australia. Budgetary provision should be made to enable CASA representatives to be involved in ICAO deliberations to the greatest extent possible in order to set the future direction in a manner that supports the national regulatory framework and thereby the industry as a whole.

CASA can strengthen its industry relations by developing practical knowledge in the field. This knowledge primarily rests with the industry. A sound system of secondment from the operating side of the industry to the regulator would have many benefits for both parties. It would assist with knowledge sharing between industry and the regulator.

In general, it is important for regulators to work closely together with industry. Boeing believes that a regulator can be the most effective by setting an open environment for communication and cooperation within the industry while consistently enforcing the rules. A three legged stool model, with manufacturers, operators and regulators working together, allows a co-ordinated approach to safety.

Further, Boeing believes the Global Aviation Safety Roadmap (GASR) is the most effective way for regulators, airlines and manufacturers to work together.

The Global Aviation Safety Roadmap was produced and developed by the Industry Safety Strategy Group (ISSG), comprised of the International Air Transport Association (IATA), Airbus, Boeing, Airports Council International (ACI), the Civil Air Navigation Services Organisation (CANSO), the Flight Safety Foundation (FSF) and the International Federation of Air Line Pilots Associations (IFALPA). The ICAO Assembly has adopted the Roadmap as its Global Aviation Safety Plan.

The completed Global Aviation Safety Roadmap marks the first co-ordinated accident reduction initiative developed by governments, manufacturers, and operators. It aims to reduce inconsistency and duplication and prioritise safety initiatives that have the highest probability of success.

The Roadmap is a basic common frame of reference for correcting inconsistencies and areas of commercial aviation safety weakness in key focus areas. It stresses an "open reporting" environment and a "just culture" for the systematic collection, analysis and dissemination of safety reports and information that will be used solely for the prevention of accidents. It also stresses the use of metrics, as effective data permits the continuous monitoring of safety and enables the measurement of the effectiveness of improvement projects. Proactive risk measurement and auditing programs can also enable more effective intervention in accident prevention.

The Roadmap seeks to reinforce the work of the regional Co-operative Development of Operational Safety and Continued Airworthiness (COSCAPs), which are sponsored by the ICAO Technical Co-operation Program. The COSCAP in Southeast Asia would certainly benefit from more Australian participation. Australia is a leader in aviation safety and Southeast Asia has seen a rise in safety incidents with rapid air travel growth. A strengthened regional

safety plan would benefit commercial aviation in this area of the world, and Australia should continue to lead in this arena.

In order to maintain safety standards as a whole, the industry and regulator must work together to develop an open environment of information sharing. The GASR would enable Australia to proceed in a co-ordinated manner with other international bodies. It would be advisable to develop an education program that raises awareness of the whole system; how it integrates the individual responsibilities are within it and the inter-dependencies between different elements of aviation safety.

8. Climate change

Boeing is committed to leading the global aviation industry towards improved environmental performance. ICAO was the first industry body to request an industry specific investigation from the IPCC. Aviation contributes to just 2% of man made global emissions[2]. However Boeing recognises that climate change is a serious problem and is committed to reducing emissions from its facilities and products.

The environmental philosophy of Boeing Commercial Airplanes is guided by four principles: 1) technology unlocks the future; 2) CO_2 and fuel consumption are the focus of our efforts; 3) efficiencies in the broader aviation system reduce emissions and should be pursued; and 4) a global approach benefits everyone.

Achievements to date

Over the last 40 years, Boeing has made significant improvements on the performance of its products. As noted in the issues paper, today's aircraft are 70 per cent more fuel efficient than the original jet aircraft. Soot emissions have been eliminated and the noise imprint of aircraft has been dramatically reduced. Fuel burn and the resulting emissions reduction has always been an important factor in aircraft design. Boeing has committed to reducing emissions from each new generation of airplane by at least 15%.

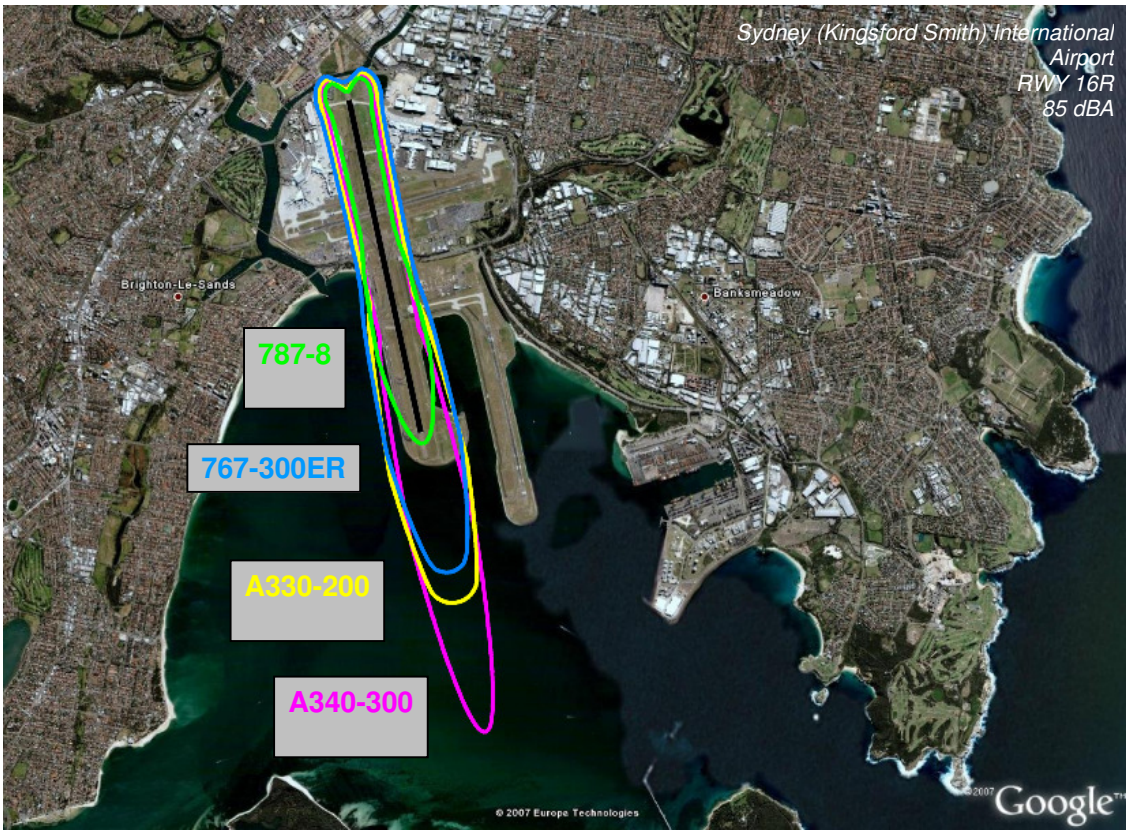
New technology

Boeing is continuing this commitment to improve aircraft efficiency. In the same way that the 707 was the first jet aircraft and symbolised a steep change in technology, the 787 brings new technologies and benefits to aviation. The 787 is the first aircraft to be made primarily from carbon fibre. This, in combination with improved engine design, has enabled a lighter aircraft that is 20% more fuel efficient than the similarly-sized 767.

[2] *Aviation and the Global Atmosphere,* Intergovernmental Panel on Climate Change, 1999

The 747-8 will incorporate lessons learnt from the 787 development. A new wing design and increased use of lightweight materials will result in an efficiency improvement of 15% from these break-through technologies.

Carbon dioxide emissions are not the only issue for aviation. Special efforts have been made with the 787's engine design to reduce NOx and noise emissions. The NOx emissions on the 787 will be 28% below 2008 industry limits, and the noise footprint of the 787 will be 60% less than the 767. For the first time ever, an airplane's 85dB noise footprint will be confined within the perimeter of the airport.



85 dB footprint of the 787 as compared to other aircraft

Alternative fuels

Second generation biofuels have significant potential to decrease aviation emissions. Second-generation biofuel feedstocks are more efficient and sustainable sources of energy than their first-generation counterparts. Boeing is taking a leading role to accelerate the development of a viable market for sustainable biofuels for commercial aviation that meet the performance requirements of current engines, have lower lifecycle CO_2 emissions, and do not compete with food crops or add to deforestation.

Virgin Atlantic demonstrated the viability of second generation biofuels with the demonstration flight of a GE-powered Boeing 747 in early 2008. Boeing has announced two more biofuel demonstrations, including one with Air New Zealand and Rolls-Royce in late 2008.

While there is still more work to be done, sustainable biofuels represent a significant environmental improvement for the future of aviation.

International co-operation

Climate change is a global issue. The effect of greenhouse gas emissions is not influenced by their country of origin.

As the aviation industry is a global activity solutions to climate change need to be at a global level. Boeing supports the ICAO process for addressing international emissions.

As the global community develops approaches to reducing greenhouse gas emissions, Boeing acknowledges that voluntary measures alone may not be enough and supports the development of mandatory yet flexible frameworks to address emission reductions.

Climate change and Air Traffic Management

ATM improvements represent the greatest short-term opportunity for significant reductions in CO_2 emissions, at the same time using equipment and resources already existing today. While improvement of the overall system will require concerted efforts by government and industry, near-term improvements in both emissions and noise can be achieved through the use of tailored arrivals, including GPS-based systems. Qantas and Airservices Australia, in association with Boeing, have pioneered development of GPS Landing Systems.

As noted above, Boeing is already working with industry and Airservices Australia to improve air traffic management operational efficiencies by streamlining routes, reducing delays and improving complicated “handoffs” between multiple ATM systems.

The International Panel on Climate Change states that improved air traffic management procedures could reduce emissions by as much as 12%. Improvements can be achieved through improved airline operations and the implementation of more effective air traffic management procedures.

Boeing is partnering with airports, airlines, and civil aviation authorities at various international airports to implement Continuous Descent Arrival (CDA) procedures. These approach paths reduce the communities’ exposure to aircraft noise and reduce fuel consumption and associated emissions.

- CDA implementation can save up to 1900 litres of fuel per flight

- Cutting flight times by a minute per flight on a global basis would save 4.8 million tons of CO_2 (Source: IATA)

9. Aviation security

Safety, security and efficiency are critical for the commercial aviation industry. However, after the events of 9/11, there has been an increased focus on aviation security. Australia has noted the challenges in balancing the actual risk reduction of security measures and the economic impact of security measures on the industry. Resources are limited: therefore, hard choices must be made to ensure that the most effective and efficient counter-measures are implemented. It is important when considering appropriate counter-measures that a risk management approach is taken. In the United States, the Transportation Security Administration recently announced its intent to use a Risk Management Analysis Process that would evaluate total risk/total risk reduction and the operational/economic impacts of various counter-measures. This process will help the Government prioritise alternatives based on the evaluation of diminishing returns. It will also provide the facts and data necessary to make the most informed decisions when it comes to protecting the commercial aviation industry.

As Australia moves to face security challenges, we encourage the use of a risk management approach to ensure that limited resources are being effectively applied and that the commercial aviation industry is in fact truly more secure.

10. Conclusion

Boeing applauds the Government for addressing the many issues impacting commercial aviation in a co-ordinated manner through the development of a National Aviation Policy Statement. The company sees a very positive future for aviation in Australia. Aviation is a facilitator of economic growth and has positive impacts ranging from increased business from travel and freight to high skill levels and innovation required by the industry.

Boeing encourages the government to continue to build on its leadership in safety, air traffic management, and environmental performance and going forward, supports the examination of increased international co-operation on international services, air traffic management, safety and climate change to enable the industry to grow and reduce duplication.