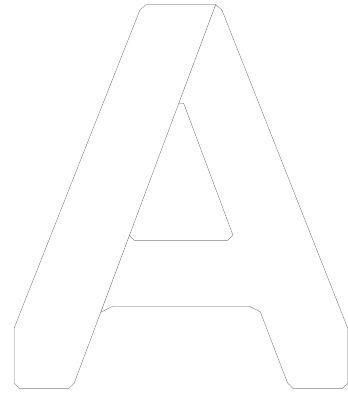




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**Energy White Paper Taskforce  
Department of Industry GPO Box 1564 CANBERRA ACT 2601**

**By email: [EWP@industry.gov.au](mailto:EWP@industry.gov.au)**

Dear Taskforce Members,

The Australian Initiative for Sustainable Aviation Fuels (AISAF; [aisaf.org](http://aisaf.org)) welcomes the announcement of the Energy White Paper.

As its name implies, the role of AISAF is to secure the long-term future of aviation by facilitating the development of a commercial scale, renewable aviation fuel industry in Australia.

Air transport, whether for freight or passengers, is critical to Australia's future. Its contribution to the bench strength of the Australian economy is significant. Last year, the number of domestic and international airline passengers in Australia exceeded 150 million. This number is forecast to increase by 3-5% per year over next 20 years.

The value of freight carried by air is 40% of total freight and rising from the current \$35 billion. Commercial aviation supports 50,000 direct jobs and more than 500,000 indirect jobs. Tourism makes a \$35 billion contribution to the economy. Airline revenue itself is ~\$13 billion.

The CAGR of the global air transport sector is also projected to be 3-5% each year for the next few decades because of a strong increase in demand by the growing middle class, particularly in China and India.

To seize the opportunity of the projected growth of the aviation industry, airlines need to secure their future energy needs. However, aviation has few options to move away from high-energy dense jet fuel to alternative sources of power.

**The National Association for the Australian Aviation and Aerospace Industries.**

Initiatives of the Association:



Liquid hydrocarbon fuel is the major component of an airline's cost structure. Total fuel expenditure by Qantas has risen from 14 per cent in 2004 to 26% of operating costs in 2013. The 2013 percentage is similar for Virgin Australia. Petroleum jet fuel prices are volatile and costs are increasing year-on-year.

Airlines have limited options to address fuel price volatility and costs. Airlines typically address these challenges through:

- Investing in new aircraft
  - Aircraft are very capital intensive
- Maintaining a strong focus on fuel management
  - This can only achieve a 1-2% improvement year on year
- Partnering with airports and air navigation service providers to improve the efficiency of aviation infrastructure
  - Airlines have no control over this infrastructure.

During the last decade, airlines have been leading the way towards another option – viable alternatives to petroleum jet fuel in the form of renewable jet fuels. These renewable fuels have physical and chemical properties that are identical to those in petroleum jet fuel but have lower carbon emissions and meet all other sustainability criteria. These renewable fuels are known as Sustainable Aviation Fuels or SAF.

Non-negotiable constraints for SAF are that they must “drop-in” seamlessly to and be interchangeable with petroleum in existing supply lines, ships, aircraft and all other vehicles, have price parity to petroleum, and significantly reduced life-cycle greenhouse gas emissions.

The International Air Transport Association (IATA), to which Australian airlines belong, has set aggressive emissions reduction goals, including the target of carbon neutral growth in the industry beyond 2020. IATA and its individual airline members are leading the way in testing and adopting SAF on a commercial scale.

The American Society for Testing and Materials (ASTM) is one organisation that certifies that a new SAF is fit-for-purpose. This is a well-documented and heavily scrutinised process. It ensures, above all, the safety of SAF as an energy source for flight and also that all requirements of the airline, airframe and engine manufactures are met.

ASTM has certified two SAF – one derived from plant oils and the other from biomass that has undergone gasification and conversion to SAF via the Fischer-Tropsch process.

The safety and environmental credentials of SAF have been proven in a large number of test and commercial flights on SAF by commercial airlines around the world, including by Qantas and Jetstar in 2012.

### **The Sustainable Aviation Fuels Industry in Australia**

In its *Green Growth Energy – Industry Opportunities for Australia Report* in June 2013, the Australian Academy of Technological Sciences and Engineering (ATSE) concluded that production of renewable liquid fuels, including SAF and renewable diesel, represents a new and large industry opportunity for Australia<sup>1</sup>.

“The nation’s research and development capacity and resource base provide competitive advantage to Australian business. A strategic policy for biofuels and biochemicals could enable Australia to develop a world-scale advanced manufacturing industry with significant regional opportunities.”

Importantly, the SAF industry will bring considerable opportunities for regional Australia because it will capture the economic benefits from production of the feedstocks required to establish the supply chains.

A number of industry-led and government-led studies and projects have been undertaken or instigated specifically to assess the feasibility and opportunities associated with development of the sustainable aviation fuel industry in Australia. Currently, Australia does not have any SAF production facilities.

These projects are particularly important because of the large number of stakeholders from the private and public sectors involved working in partnership.

They include:

- Flight Path to Sustainable Aviation Fuels, 2011<sup>2</sup>
- Advanced Biofuels Study. Strategic Directions for Australia, 2011<sup>3</sup>
- Sustainable Mallee Jet Fuel – Sustainability and Life Cycle Assessment, release scheduled for early 2014<sup>4</sup>
- Feasibility Study of Australian Feedstock and Production Capacity to Produce Sustainable Aviation Fuel, 2013<sup>5</sup>
- Fuelled for Growth. Investing in Victoria's Biofuels and Bioenergy Industries, 2012<sup>6</sup>
- Techno economic analysis of renewable aviation fuel from microalgae, *Pongamia Pinnata*, and sugar cane, 2012<sup>7</sup>

These reports demonstrate:

- That SAF are being demanded by Australian aviation in both the civil and defence sectors
- The Australian aviation industry is taking a long-term strategic approach to creating and building the industry
- The considerable economic benefits for regional, State and national economies. An SAF industry would have direct and substantial impact on GDP; bring new investment and jobs into rural, regional and metropolitan areas.
- The benefits of diversification of energy supply not only for aviation but also for industry sectors dependent on heavy logistics fuels,
- The benefits of diversification of the supply of a variety of renewable molecular and bio based products which feed into many other manufacturing sectors
- The potential to generate new export opportunities for Australia.
- The major challenges for his emerging SAF industry in Australia are related to deploying existing technologies at commercial scale, driving down costs and reducing risk as much as possible so that investors will finance the build out of new supply chains.

## **Commercial Reality of the SAF Industry**

The USA is leading the way towards a commercially viable SAF industry. The first facility to produce SAF, led by a consortium including United Airlines, World Fuels Services and Altair Fuels, will come on line in July this year in Los Angeles.

USA leadership is a product of vision and leadership by industry and government. The US Federal Aviation Agency (FAA), an agency within the Department of Transport, has taken a strategic position in developing the industry.

In September 2013, the FAA announced that it “continues its goal to improve National Airspace System energy efficiency by at least 2% per year, and to develop and deploy alternative jet fuels for commercial aviation, with a target of one billion gallons of alternate jet fuel in use by 2018.”<sup>8</sup> This volume represents ~5% of US airlines’ annual consumption of jet fuel.

In building the SAF industry in the US, the Department of Transport has worked closely and in a coordinated way with a number of other departments that are key to commercial success. These include the Departments of Energy, Agriculture, Commerce and Defence.

As a result of well coordinated policy and instruments such as the Renewable Fuel Standard, over US\$5.79 billion in private capital has been invested in the United States in building an advanced and cellulosic biofuels industry. Furthermore 28 out of 50 states now have at least one existing or planned biorefinery<sup>9</sup>.

## **Australia-USA Collaboration and Partnership**

In September 2011, the US Federal Aviation Administration and the Commonwealth Department of Resources, Energy and Tourism signed a Memorandum of Understanding to work collaboratively on sustainable aviation fuels. This was signed by the Secretary of the U.S. Department of Transport, Leroy Hood, and the U.S. Ambassador, the Hon Kim Beazley, in San Francisco on 13 September 2011 at the APEC Transportation and Energy Ministerial Meeting<sup>10</sup>.

The US Department of Defence, in conjunction with the FAA and the Department of Energy and Agriculture is one of the most important market makers. Even though its main ambition is to achieve independence from foreign oil, the Department of Defence purchases of SAF will have many other co-benefits for the economy and the environment. Allies intending to obtain fuel from or supply fuel to the U.S. Navy tankers will need to be interoperable.

In July 2012, the US and Australian Navies signed a Statement of Cooperation to work collaboratively on SAF and other renewable heavy logistics fuels and the use them interchangeably during joint operations.<sup>11</sup>

At the Farm to Fleet Industry Day on 30 January 2014 in Washington DC, the US Navy began – for the very first time – the contracting process to purchase bulk advanced biofuels (renewable diesel and jet fuel) for regular operational use. This solicitation is for deliveries scheduled to begin in 2015.<sup>12</sup>

## Issues for Consideration in the Energy White Paper

- The critical importance of secure and domestically sourced aviation fuel for commercial and military aviation for Australia's national security and economic development
- Strategies to capitalise on Australia's unique comparative and competitive advantages for building a major new industry based on commercial production of SAF and co-products.
- Forging strong, strategic and joint leadership by the public and private sectors to enable the transition from petroleum jet fuel to SAF
- Policies supporting a target of a blend of 5% SAF in all jet fuel loaded at Australian airports and Defence bases by 2018 (equivalent to the US target) would send the right signals to the industry
- Policy frameworks with the objectives of: incentivising and enabling investors to provide long-term patient capital; and encouraging the commercial production of SAF on terms no less favourable than for production of other liquid hydrocarbon fuels
- Existing policies that direct investment away from SAF projects (the Qantas/Shell Feasibility Study highlights the size of this market distortion)
- The declining capacity in Australia for hydrocarbon fuel refining and upgrading – only four refineries are now operating
- The opportunities afforded for employment and economic development in rural and regional Australia, the considerable downstream impacts across supply chains, broader economic benefits for the national economy
- Each of Australia's States & Territories will need to play an important role in building SAF supply chains based on their own specific sources and types of feedstocks
- The reduction in greenhouse gas emissions associated with commercial-scale volumes of SAF

AISAF looks forward to working with the government on forward-looking, long-term energy policy.

Yours sincerely,



D Susan M Pond AM FTSE

Chair, Australian Initiative for Sustainable Aviation Fuel

## Links to Supporting Documentation

1. [www.atse.org.au/atse/activity/energy/reports/atse\\_green\\_growth\\_report\\_2013/content/activity/energycontent/atse\\_green\\_growth\\_energy\\_report\\_2013.aspx?hkey=1c69b335-8ea5-488e-9f6a-6a0f3f0b12a1](http://www.atse.org.au/atse/activity/energy/reports/atse_green_growth_report_2013/content/activity/energycontent/atse_green_growth_energy_report_2013.aspx?hkey=1c69b335-8ea5-488e-9f6a-6a0f3f0b12a1)
2. [www.csiro.au/science/Sustainable-Aviation-Fuels-Road-Map](http://www.csiro.au/science/Sustainable-Aviation-Fuels-Road-Map)
3. <http://arena.gov.au/files/2013/10/advanced-biofuels-study.pdf>
4. <http://www.futurefarmonline.com.au/knowledge-base-1/mallee-jet-fuel-moves-closer-to-reality>
5. <http://www.qantas.com.au/infodetail/about/environment/aviation-biofuel-report.pdf>
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10. [http://www.faa.gov/news/press\\_releases/news\\_story.cfm?newsId=13087](http://www.faa.gov/news/press_releases/news_story.cfm?newsId=13087)
11. <http://news.defence.gov.au/2012/07/20/australian-navy-explores-alternative-fuel-use-with-united-states/>
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