Sustainable Aviation
Biofuels –
China Implications

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Building on a strong track record

- **90% Reduction in Noise Footprint**
- **70% Fuel Improvement and Reduced CO₂**

**Early Jet Airplanes**
- More fuel
- Higher decibels

**New Generation Jet Airplanes**
- Less fuel
- Lower decibels

Noise footprint based on 85 dBA.

1950s → 1990s
Boeing is committed to the environment

“Protecting our planet’s environment and finding new ways to harness diverse energy resources continues to be a priority for Boeing. And we are demonstrating our commitment through action.”

Jim McNerney
Chairman, President & CEO
The Boeing Company
Our plan and commitments

100%
Relentlessly pursue manufacturing and life cycle improvements
100% of Boeing major manufacturing sites will maintain ISO 14001 certification.

25%
Improve performance of worldwide fleet operations
Focus on 25% efficiency improvements in worldwide fleet fuel use and CO₂ emissions by 2020.

15%
Deliver progressive new products and services
Improve CO₂ emissions and fuel efficiency by at least 15%

75%
Pioneer new technology
Devote more than 75% of R&D toward benefiting environmental performance
Following four successful biofuel flight tests, the evaluation report on Bio-SPK released by Boeing in June 2009 provides the foundation of biofuel certification.

Chinese jetfuel certification community led by Sinopec actively participating in ASTM certification efforts.
Sustainable Aviation Biofuels – China Implications

Enabling the industry to achieve market viability of sustainable biofuels for commercial aviation – by 2015

- Large amount of marginal land in China (SFA: 75 million mu of marginal land planted by 2020).
- On-going R&D on long-term feedstock options (algae, etc.).
- Potential risk: financial incentive and pricing support may be needed.
Sustainable Aviation Biofuels – China Implications

Enabling the industry to achieve market viability of sustainable biofuels for commercial aviation – by 2015

- Mature processing technology available, but not yet in commercial use.
- With current refining technologies, minimum economic scale is around 200,000 tonne/year.
- Challenge - Business case of bio-jet vs bio-diesel for value chain.
Enabling the industry to achieve market viability of sustainable biofuels for commercial aviation – by 2015

- Current biofuel is a “drop-in” replacement in existing distribution infrastructure and aircraft equipment.
- In China, majority of fuel distribution infrastructure is owned and operated by CNAF, a state-owned company, resulting in ease of distribution.
Enabling the industry to achieve market viability of sustainable biofuels for commercial aviation – by 2015

- Fuels Approval
- Feedstock Viability
- Commercial Production
- Airport Infrastructure
- Aviation-Prioritized Sustainable Biofuels

- Unlike ground transportation, aircraft must rely upon liquid fuel in foreseeable future.
- Aviation is a highly visible industry – exemplary achievement recognized and rewarded.
- Governmental and financial support essential to launch.