The Boeing 787 Dreamliner:
More Than an Airplane

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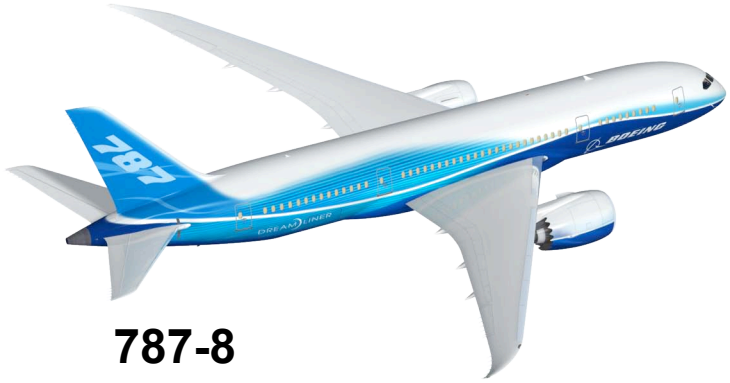
Director
Certification, Government and Environment
787 Program

May 2005

Our Commitment Is Real

Boeing Commercial Airplanes is committed to the balance between aviation and the environment

The 787 Is a Complete, Flexible, Efficient Family



787-8

223 passengers (three-class)

8,500 nmi / 15,700 km

787-3

296 passengers (two-class)

3,500 nmi / 6,500km

787-9

259 passengers (three-class)

8,300 nmi / 15,400 km

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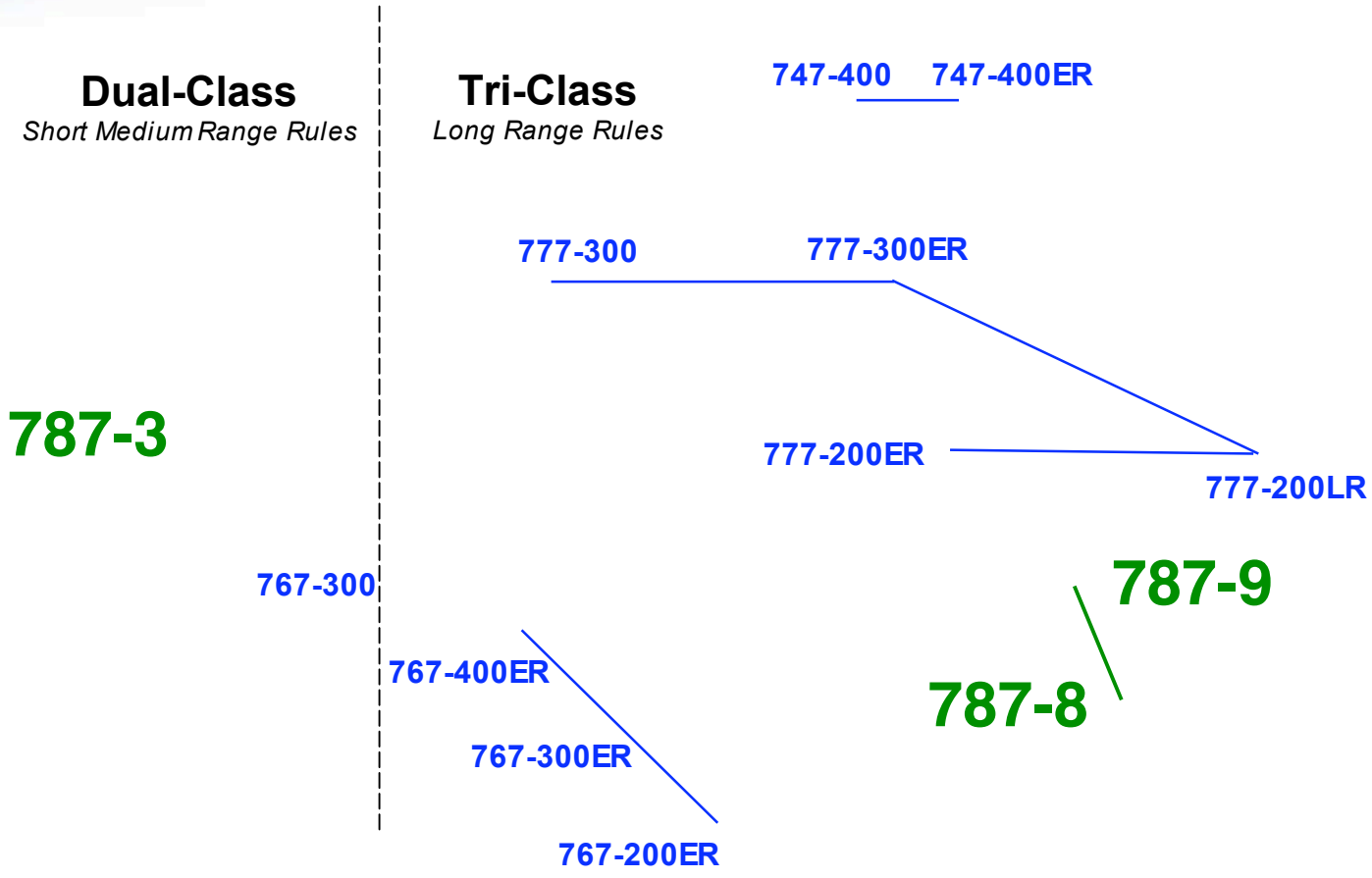
Efficiency for Medium- and Long-Haul Markets



Expectations for Environmental Performance Are Increasing

Concern	World Expectations	787 Capabilities
Carbon Dioxide (CO_2)	Continual reduction	20 percent reduction
Noise	Smaller footprint	60 percent smaller than the competition
Other Emissions	Continual reduction	Meets all anticipated new regulations

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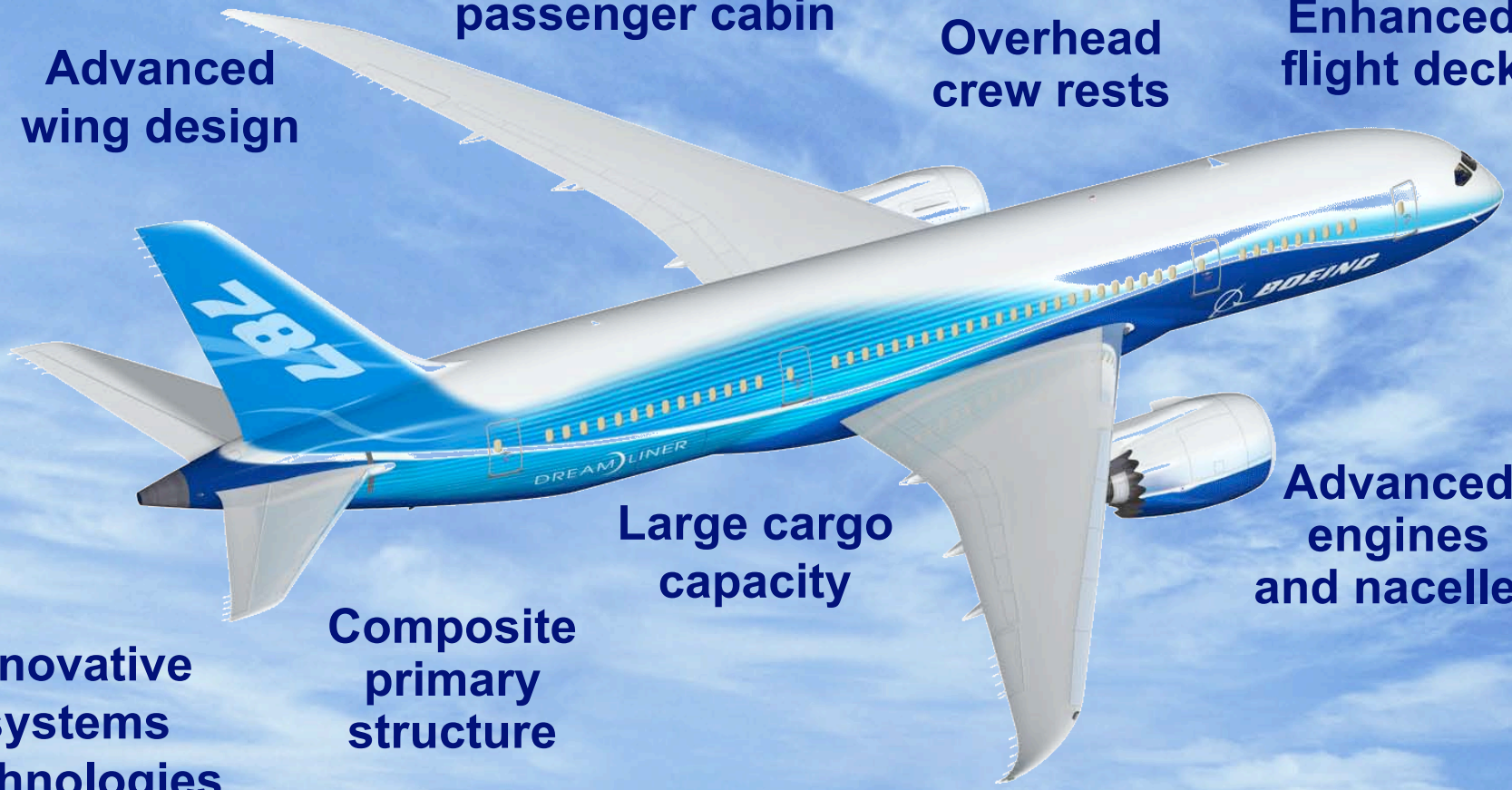
Configured for Success

787-8 Design Features



Breakthrough passenger cabin

Advanced wing design

Overhead crew rests

Enhanced flight deck

Large cargo capacity

Advanced engines and nacelles

Composite primary structure

Innovative systems technologies

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Advanced Technology Contributions to 787 Efficiencies

Propulsion Systems Feature Key Technologies

GEnx

Trent 1000

- **Engine and nacelle features:**
  - **Higher bypass ratio**
  - **No-engine-bleed systems architecture**
  - **Low-noise nacelles with chevrons**
  - **Laminar flow nacelles**
  - **Interchangeable (at the wing)**

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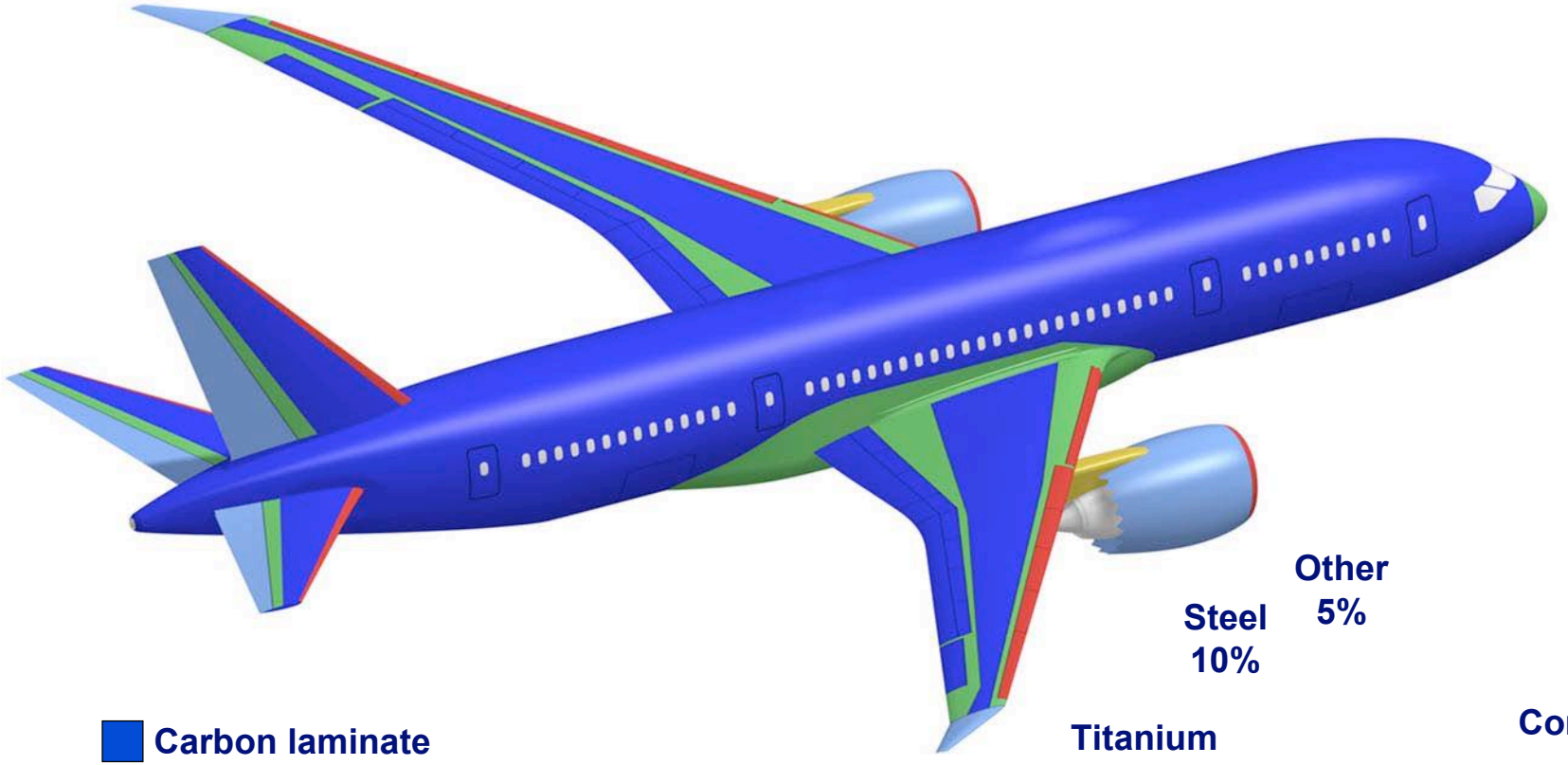
Aerodynamics Progress Report

- Extensive wind tunnel testing conducted in multiple facilities
  - Validated CFD design tools
  - Verified 787 high speed and high lift design
- Excellent progress towards meeting all performance targets

Composite Solutions Applied Throughout the 787



- Carbon laminate
- Carbon sandwich
- Fiberglass
- Aluminum
- Aluminum/steel/titanium pylons

Composites 50%

Aluminum 20%

Titanium 15%

Steel 10%

Other 5%

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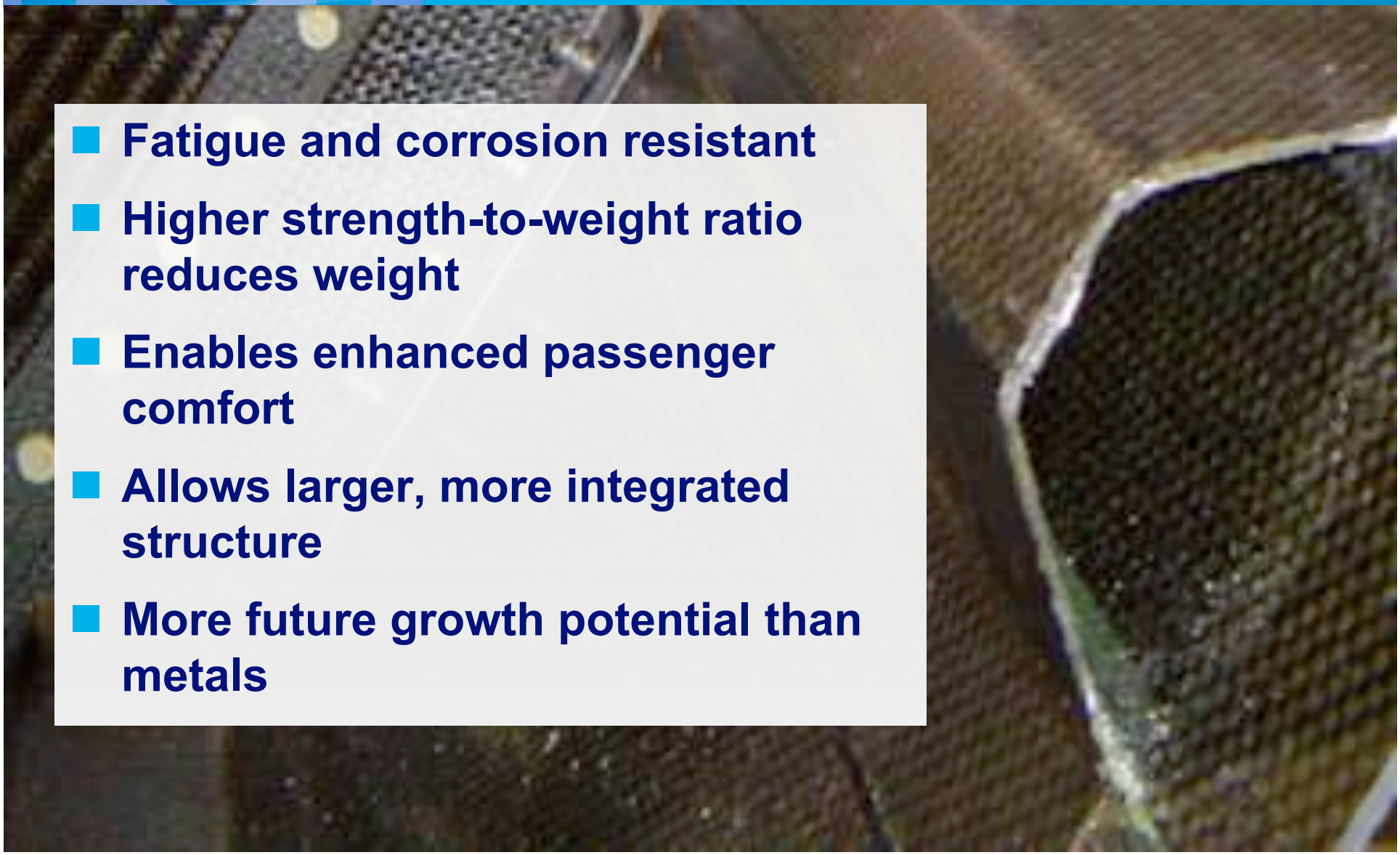
Composite Are the Smart Choice



- Fatigue and corrosion resistant
- Higher strength-to-weight ratio reduces weight
- Enables enhanced passenger comfort
- Allows larger, more integrated structure
- More future growth potential than metals

Starting the Second Century of Powered Flight

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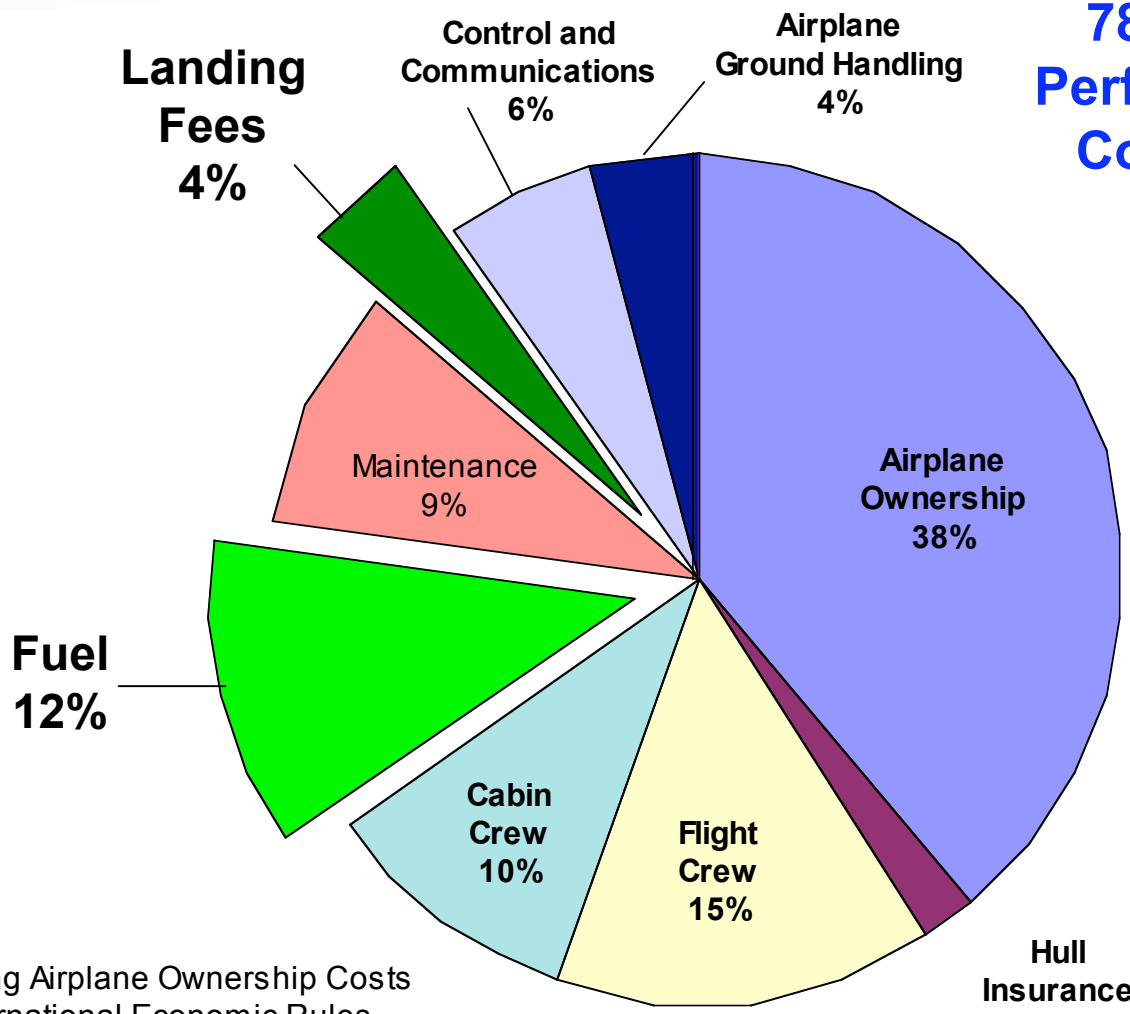
Environmental Performance Improves the Bottom Line

787 Environmental Performance Improves Costs in Two Areas



TAROC Excluding Airplane Ownership Costs
U.S. Typical International Economic Rules
3,000 nm trip

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Advanced Systems Technologies Provide Value

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Common Core Open Systems Architecture

More Electric Systems Architecture

Advanced Flight Controls

Integrated Health Management

e-Enabled Systems

Wireless IFE

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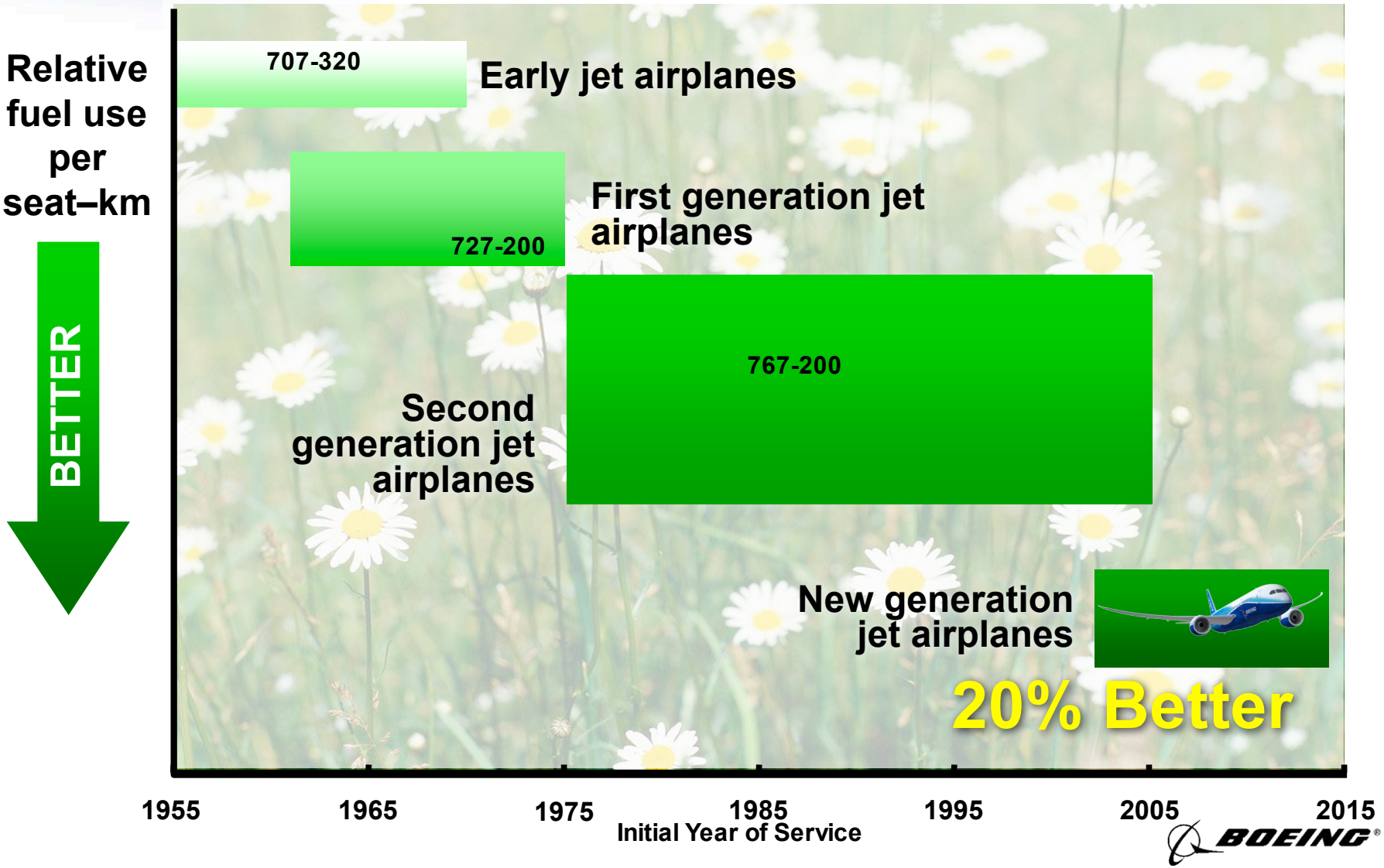
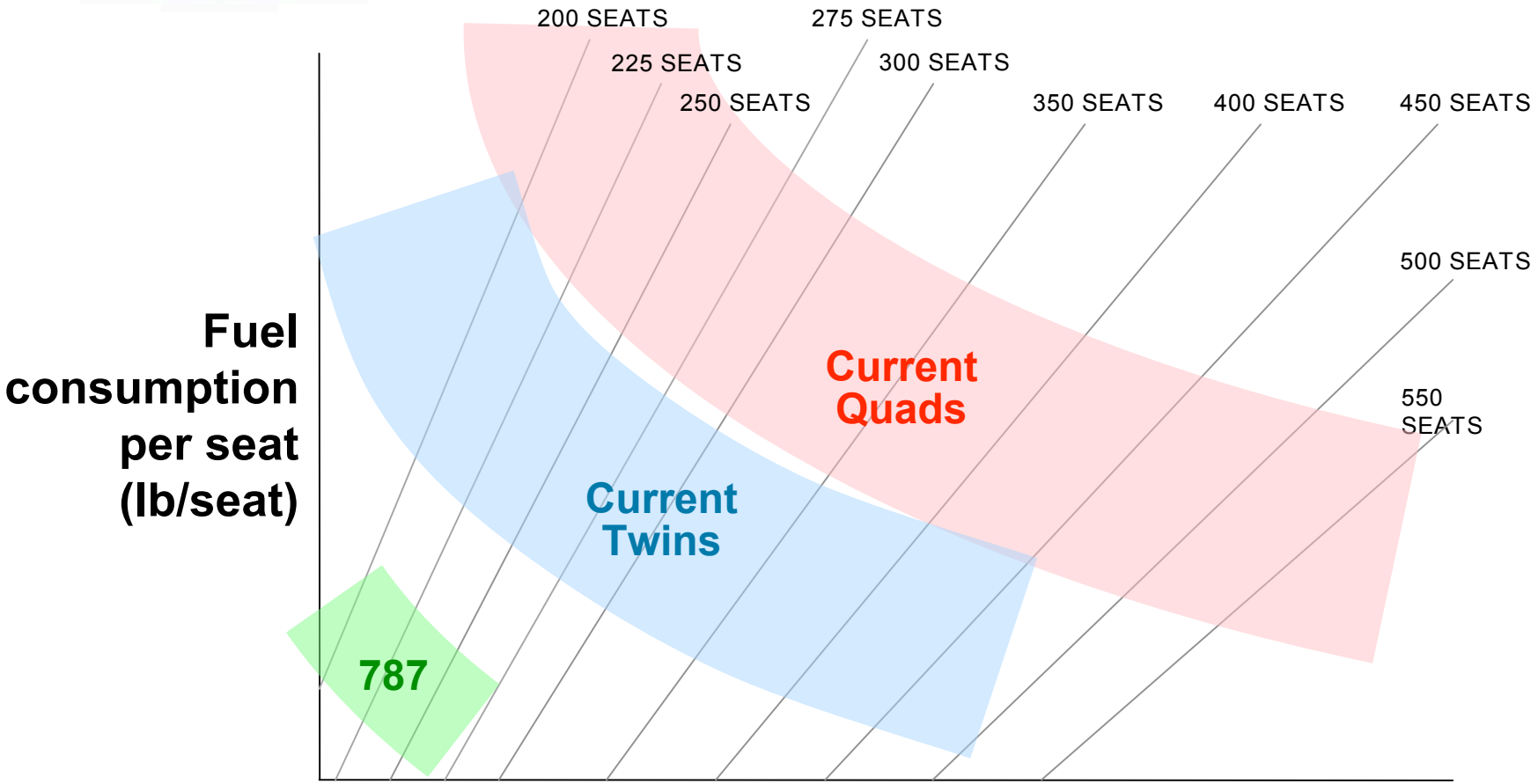
Continuing the Tradition of Improved Performance

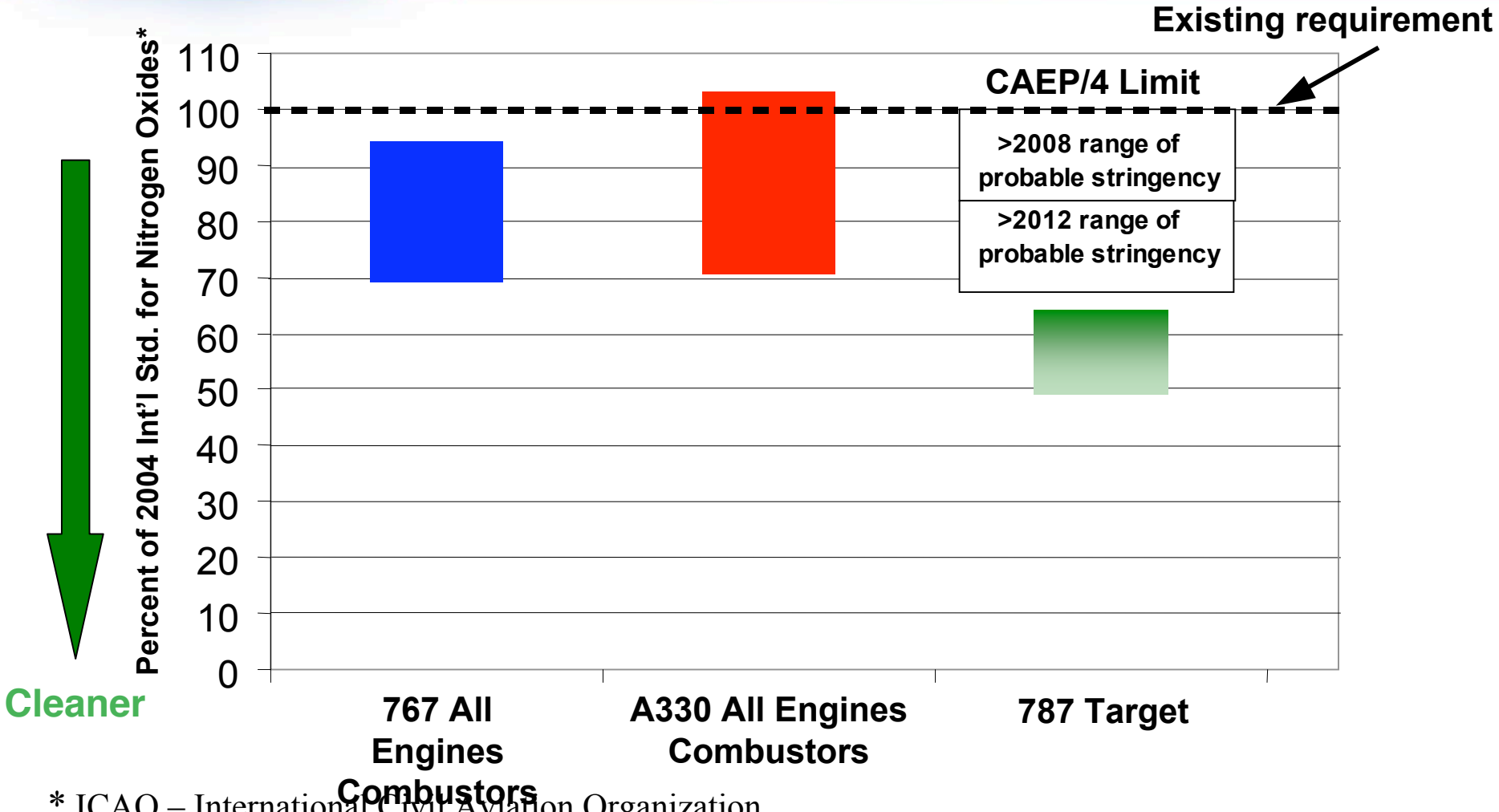


A New Standard in Performance



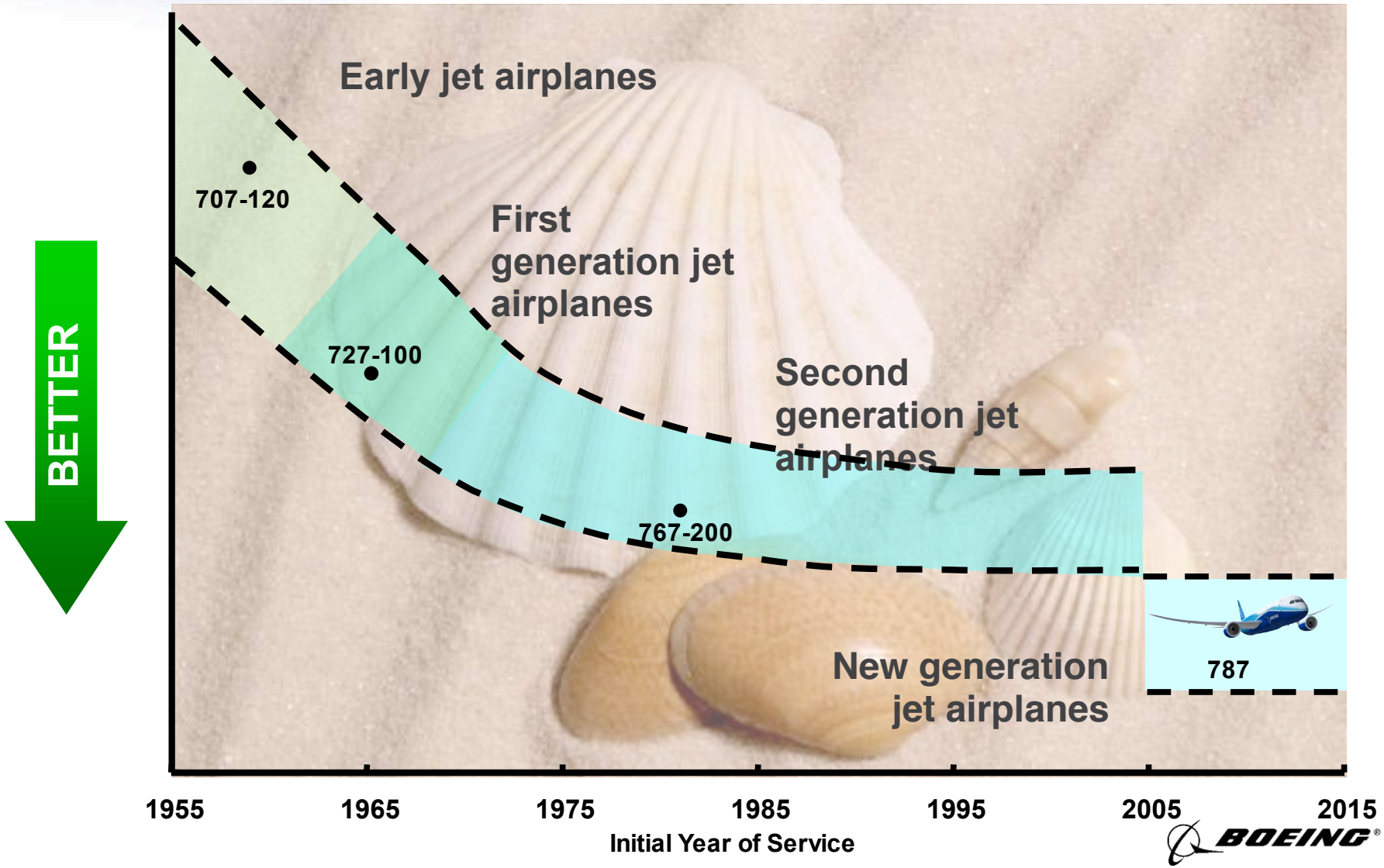
- Tri-class seating
- 3,000 nmi mission

Improved Fuel Use Means Fewer Emissions



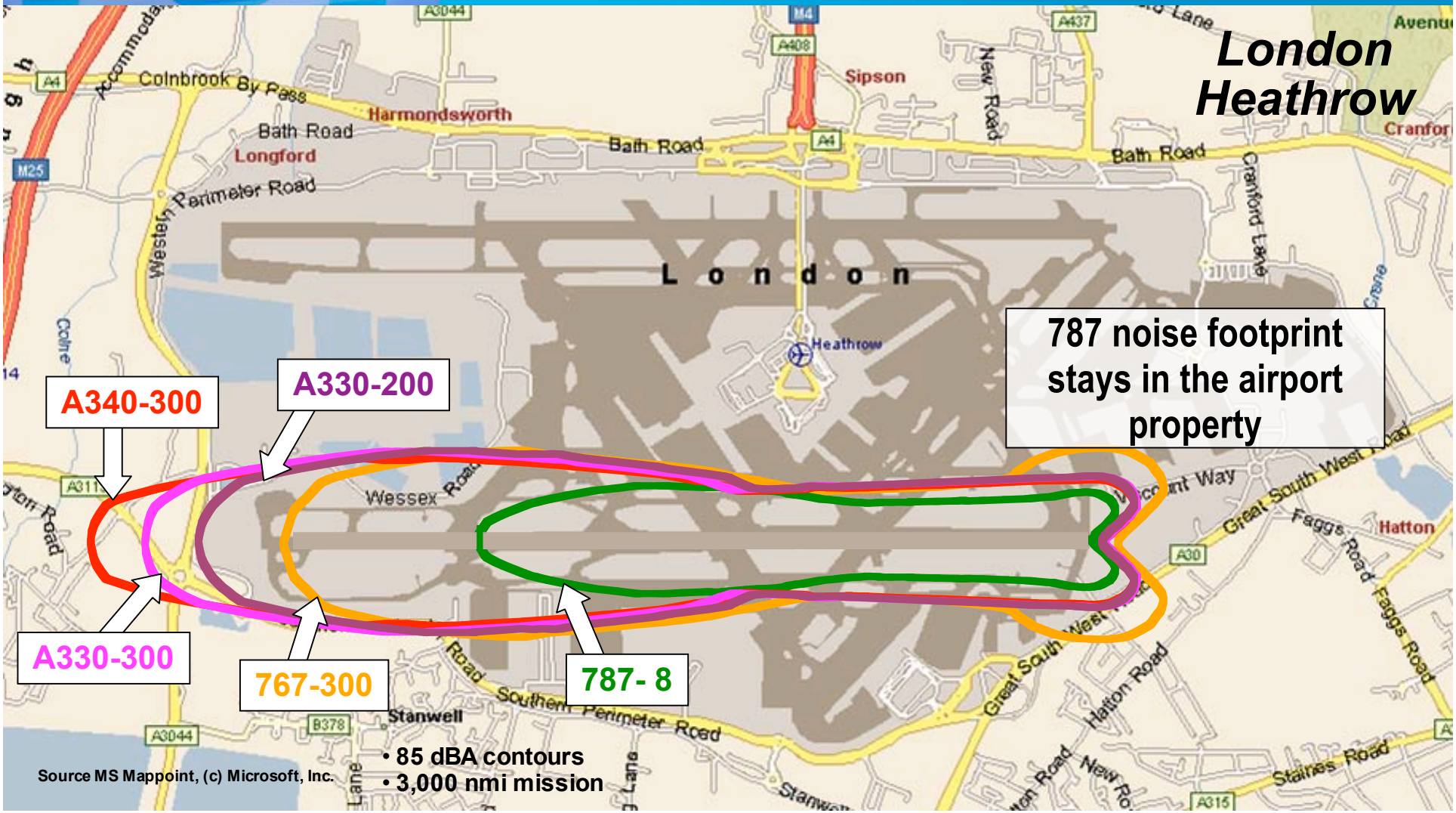
* ICAO – International Civil Aviation Organization

Quieter than Other Twin Aisle Airplanes



Quiet for Airport Communities

85 dB Noise Contours at Heathrow



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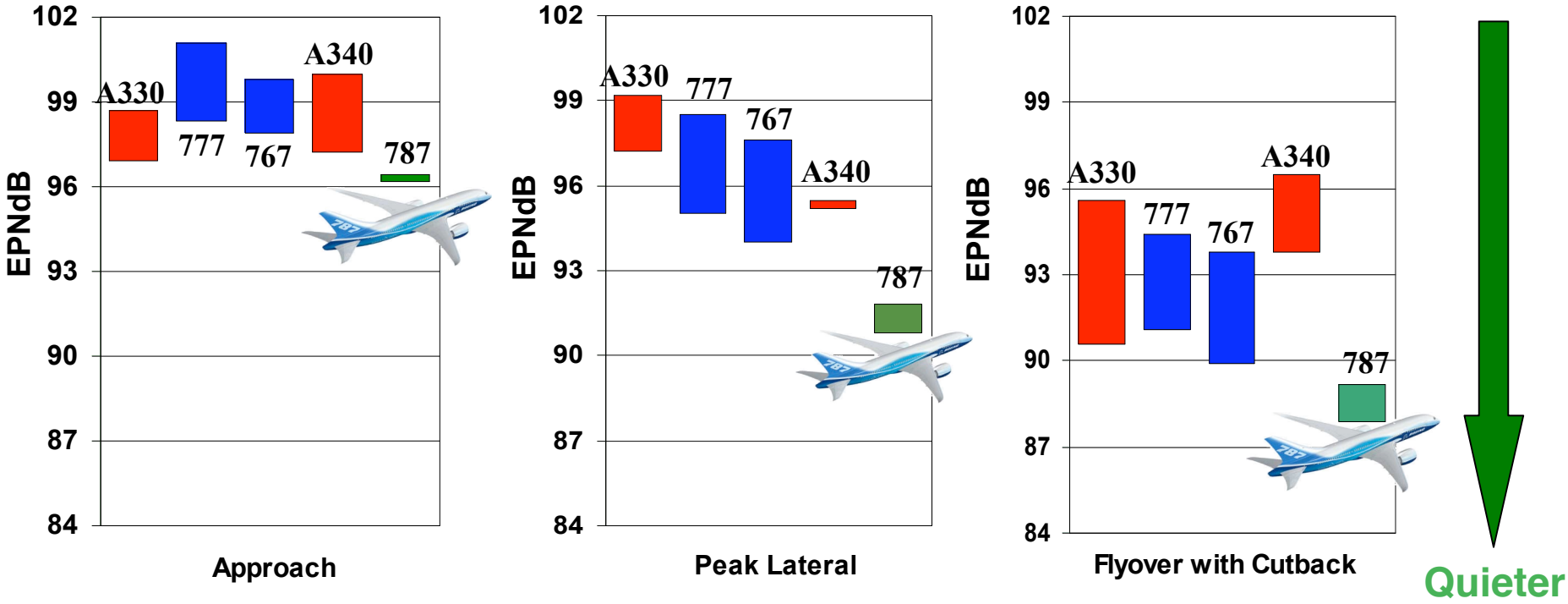
Quieter for Airport Communities



787-8 476k MTOW/365k MLW

Nominal Estimates: Tolerance Required for Guarantee

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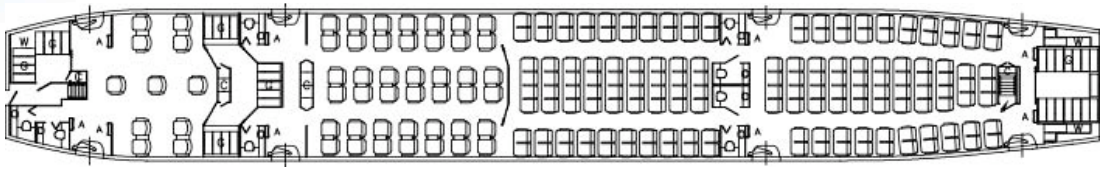
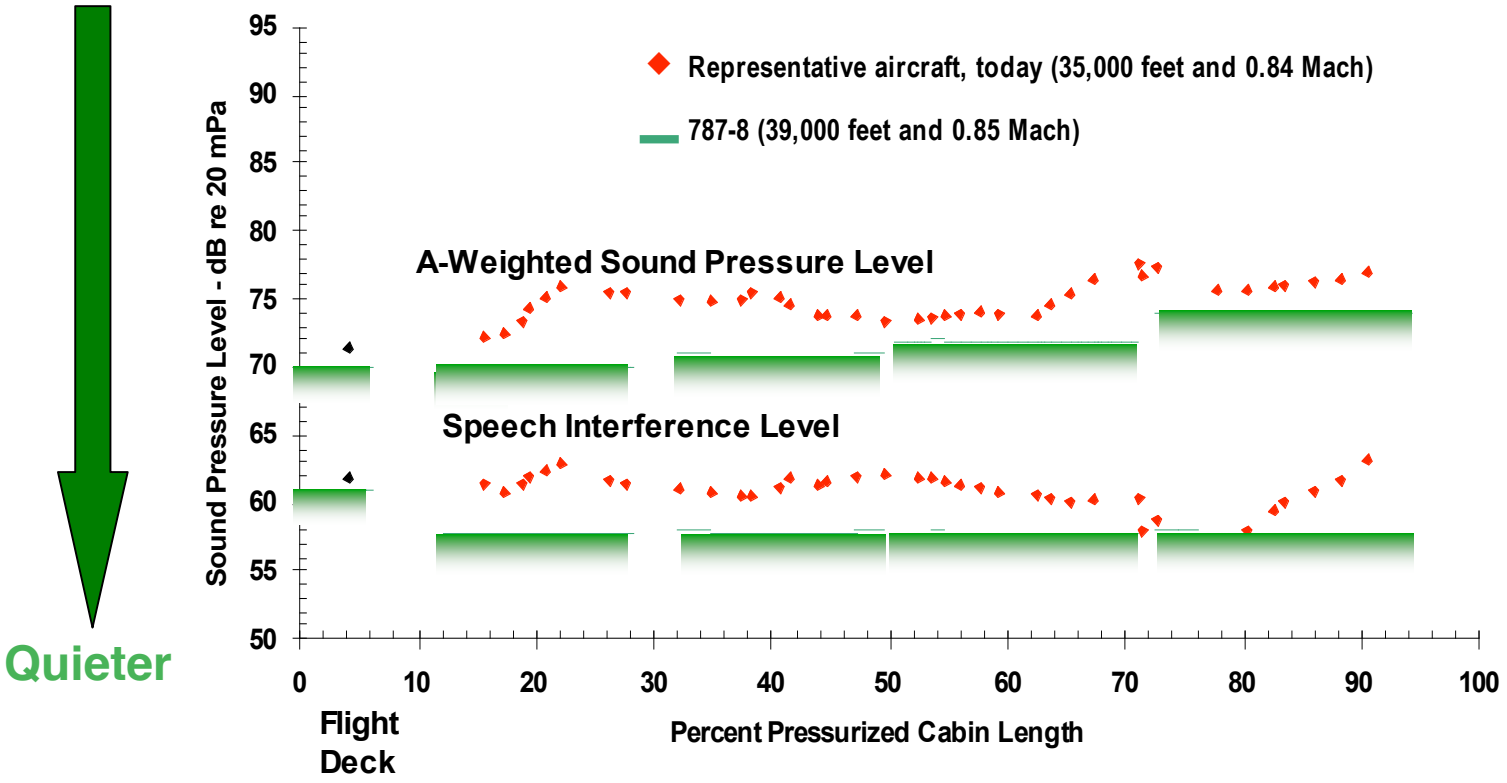
A Better Experience: Quiet Cabin

Aisle Seats at Appropriate Cruise Altitude and Airspeed





A Better Experience: Lower Cabin Altitude

- Comfort is significantly improved by reducing cabin altitude below 8,000 feet
- Comfort is not significantly improved by reducing below 6,000 feet
- At 6,000 feet, fatigue and headaches are reduced in susceptible people

A Better Experience: Cleaner, Healthier Air

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Outside Air

Cabin Air

Particle-Free Air

Preferred Environment

HEPA Filter

Removes:
- Bacteria
- Viruses
- Fungi

Gaseous Filtration

Removes:
- Odors
- Irritants
- Gaseous contaminants

Fewer complaints of:
- Dizziness
- Headache
- Eye Irritation
- Dryness

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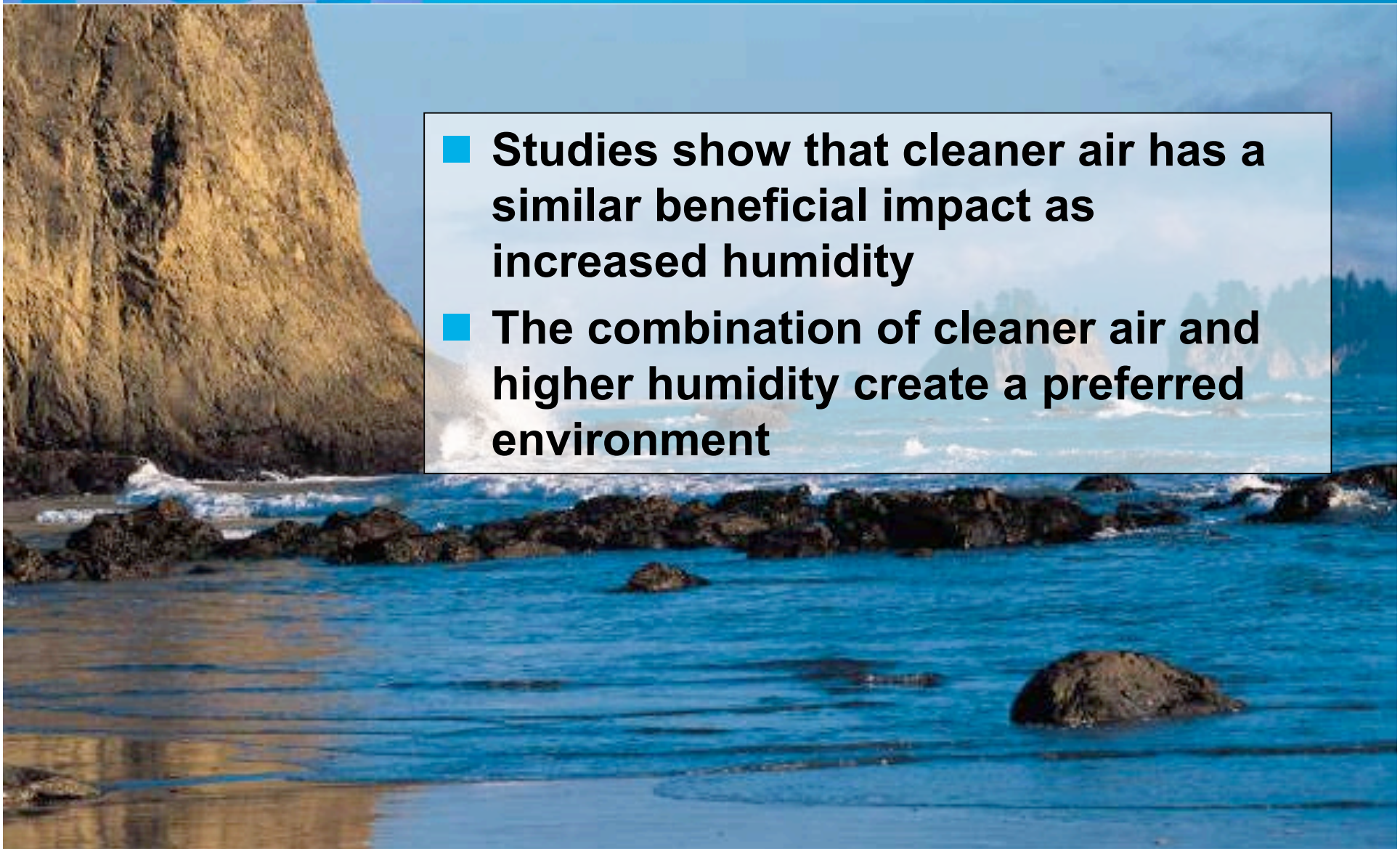
A Better Experience: Cleaner Air, Higher Humidity



- Studies show that cleaner air has a similar beneficial impact as increased humidity
- The combination of cleaner air and higher humidity create a preferred environment

Designing for the Environment

Life Cycle Approach

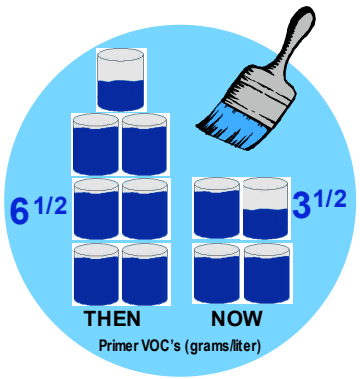
DESIGN

MANUFACTURE

OPERATIONS

RECYCLE

Environmental considerations are integral to the design of the 787



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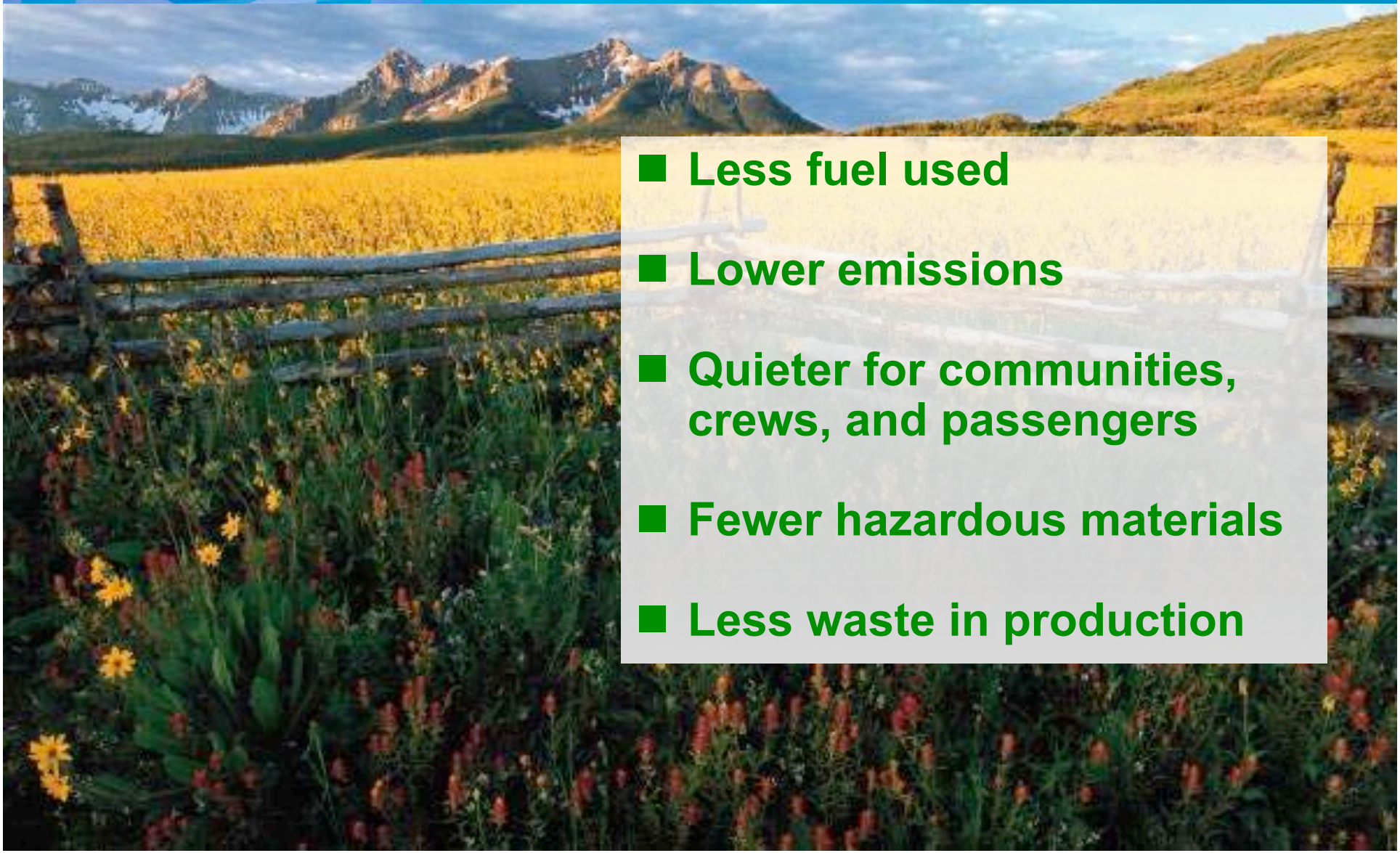
The 787 Will Be an Environmental Leader



- Less fuel used
- Lower emissions
- Quieter for communities, crews, and passengers
- Fewer hazardous materials
- Less waste in production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Worldwide Market Interest Strong
261 Announced Orders and Commitments
First Choice
6
JAL
30
Ethiopian
5
ANA
All Nippon Airways
50
Blue Panorama airlines
4
AIR NEW ZEALAND
2
Hainan Airlines
CHINA EASTERN
ICELANDAIR
2
KOREAN AIR
10
AIR CANADA
14
AIR-INDIA
20
Vietnam Airlines
4
Continental
10
60
SHANGHAI AIRLINES
XIAMEN AIRLINES
PRIMARIS AIRLINES
20
nwa
NORTHWEST AIRLINES
18
CHINA SOUTHERN
AIR CHINA
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Development Schedule On Track

2002	2003	2004	2005	2006	2007	2008
Airplane Announcement	Authority To Offer	Program Launch	Firm Configuration		First Flight	Certification and Delivery

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