FAA’s NextGen

- **Comprehensive Overhaul of US National Airspace System**

- **Benefits**
  - Fewer Delays
  - Reduce Environmental impacts
  - Improve Safety
  - Improve Performance

- **Products**
  - Satellite Based Navigation
  - Performance Based Navigation (PBN)
  - Airport Surface Detection (ASDE-X)
  - Area Navigation (RNAV)
• Impacts
  – Closely spaced parallel operations (RW Separation <1,300 m)
  – Reduction in aircraft spacing
  – Reduction in taxiing times
  – Larger aircraft at smaller airports

• **Doubling the number**
• **of aircraft in the air**
Pavement Design Development
Sustainability – What is it?

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” - Brundtland Commission 1983

“One that meets transportation and other needs of the present without Compromising the ability of future generations to meet their needs” - TRB 2005

“A holistic approach to managing an airport so as to ensure the integrity of the Economic viability, Operational efficiency, Natural resource conservation and Social responsibility (EONS) of the airport.” ACI-NA

“Triple Bottom Line”

Pavement Design Development
Sustainability – Why is it happening?

• Factors
  – Worldwide awareness and a global economy
  – Airline industry financial pressures
  – Rising Energy Costs
  – Green and environmental mandates
  – Resource conservation
  – Aging Infrastructure
  – Facility life cycle costs
  – Enabling technologies
Pavement Design Development

- “Green” vs. “Sustainable”
  - “Green” – Focuses solely on Environmental Stewardship or one component of the “Triple Bottom Line”.
  - “Sustainable” – Includes the ‘Green’ aspect of a project and also integrates the other two components of Economic Growth and Social Responsibility.

Pavement Design Development

- Factors Affecting Sustainability
  - Cut and Fill
  - Design Life
  - Drainage
  - Thickness
  - Construction Method
  - Material Selection
  - Life Cycle Cost
Rating Systems

- US Green Building Council (USGBC) LEED® program
- Institute for Sustainable Infrastructure
- Airport Authorities

Pavement Design Development

- Design Beyond Fatigue Cycles
  - Analyze the “Whole” System

*Wathne, ACPA
The Future

• “New” Technologies/Materials
  – Stone Matrix Asphalt
  – Warm Mix Asphalt
  – Half-Warm Mix Asphalt
  – Increased amount of recycled materials
  – Concrete admixtures
  – Supplementary Cementing Materials (SCM)
    • Portland-Limestone Cement (PLC)

The Future

• “New” Technologies/Materials
  – Life Cycle Assessment (LCA)
    “Cradle-to-grave” Concept
    ISO 14040 Series of Standards
    Involves a cumulative analysis of impacts throughout all stages of the life cycle
The Future

• “New” Technologies/Materials
  – Digital Imaging for Pavement inspection
  – QC/QA of Asphalt Compaction using Ground Penetrating Radar (GPR)
  – Intelligent Compaction

The Future

• 40 Year Design Life
Resources

ACRP REPORT 42
Sustainable Airport Construction Practices

ACRP SYNTHESIS 10
Airport Sustainability Practices

SUSTAINABLE AVIATION RESOURCE GUIDE
Planning, Implementing and Maintaining a Sustainability Program at Airports

Resources

Sustainable Airport Planning, Design and Construction Guidelines for Implementation on All Airport Projects

Sustainability Report

The Future of Airfield Pavements
30-August-2011
Federal Aviation Administration