Climate Change and Airports: Adaptation Planning

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Agenda

• Potential climate change effects on airports
• Planning for climate change adaptation
• Adaptation options, strategies
• Need for more information and collaboration
• Goal – Planning to support more resilient airports and aviation system
Climate-Related Risks Faced by Airports

Physical Risks
- Rising air and ocean temperatures
- Rising sea level and surge
- Changes in geographic moisture regime
- Changes in habitats
- Increased wind, storm intensity and frequency

Regulatory/Business Risks
- Business interruptions
- Costs for mitigation & compliance
- Changes in natural resources and materials
- Changes in social and political systems
Climate-Induced Changes May Affect an Airport’s Most Costly Operations/Assets

- Airport infrastructure, design
- Aircraft
- Deicing capacity
- Storm water management
- Watershed management, flood protection
- Water resources and supply
- Water and wastewater treatment
- Vegetative ground cover and dust control
- Insurance and legal liability
Examples of Potential Climate Change Effects at Airports

• Property damage
• Increased business costs
  – fuel, electricity, insurance
• Service disruption
  – Air space
  – Ground transportation
• Sudden (or gradual) changes in demand
• Unhappy customers
Most of Our Information Is Reactive – From Extreme Events
Longer Term Trends – May Pose Different Risks than Extreme Events

• Hydrologic cycles
• Temperature means, extremes
• Rising sea levels, glacial melt
• Precipitation changes
• Limits on resources or supplies
• Freeze/thaw variations
Airports Have a Great Deal of Experience with Risk Management

- Extensive programs to reduce probability of bad outcomes and severity of consequences
- Risks airports currently manage include:
  - Safety and security
  - Legal and environmental
  - Financial and cash flow

Recommendation: Add potential climate change effects to the list of considerations
  - Incident management, business continuity plans
More than an environmental issue...

• Requires collaboration among airport departments:
  – Build resilient business
  – Minimize impacts of disruptions
  – Optimize competitiveness

• Consider the airport’s interdependencies with the local, regional, and global transportation and aviation systems

• Consider airport’s role in the community
Timing... Plan Now and Later

- Airport infrastructure plans often overlap with the expected timeline for climate change
- Assess vulnerability and risks now
- Prioritize and plan for range of effects
  - Long term trends
  - More acute, or extreme events
- Monitor effectiveness and update strategies

Source: U.S. Climate Change Science Program, March 2008
Benefits, Costs, and Effectiveness of Adaptation Options

• Airports need more dialogue & better information

• Successful adaptation planning requires shared:
  – Information and resources
  – Best practices and lessons learned
  – Contingency and response plans

• Goals: Prudent investments, well-designed measures, and a comprehensive program
Example Adaptation Options Airports May Consider

- Infrastructure reinforcement
- Seawalls, coastal protection
  - Hard defenses, natural features
- Diversified local supplies/resources
  - Fuel, electricity, water
- Storm water improvements
  - Drainage, runoff, pumping, storage
- Response programs for disruptions
- Emergency management plans
No Matter How Well Prepared Your Airport Is, Consider the System...
Collaboration in the Airport Community is Critical to Goals

• Work together to build a more resilient system
• Reduce vulnerabilities of airports, surface access, and other critical infrastructure
• Plan for disruptions of normal operations
• Prepare for emergency response
• Develop infrastructure design guidelines
• Work with govt agencies to integrate climate change in transportation infrastructure funding and management
Workshop on Adaptation of Aviation to Climate Change

• Hosted by the Transportation Research Board Committee on the Environmental Effects of Aviation (AV030)
• Woods Hole, MA
• May 19-20, 2011
• Presentations at http://www.trbav030.org/meeting2011.html

Outcome of TRB Climate Change Adaptation Workshop
Mary Ellen Eagan, President, HMMH
John Putnam, Partner Kaplan Kirsch and Rockwell and C...
Follow-up from the May 2011 TRB AV030 Workshop

• Engage airports more directly in this discussion
• Collaborate with ICLEI – Local Governments for Sustainability. Access to their adaptation planning tools.
• ACRP Problem No. 12-02-25: *Climate Change Adaptation Planning: Risk Assessment Model Pilot*
• Discussion with ACI Leadership – More than an environmental issue; transcends nearly every aspect of airport planning and operations
Airport Adaptation Studies


- **Assessment of Port Authority of NY & NJ Facilities to the Impacts of Climate Change**, Susanne DesRoches - The Port Authority of NY & NJ. May 2011.


  [http://www.lawa.org/uploadedFiles/LAWA/pdf/LSAG%20Version%205.0%20021510.pdf](http://www.lawa.org/uploadedFiles/LAWA/pdf/LSAG%20Version%205.0%20021510.pdf)

- Schiphol Mainport, Knowledge for Climate Research Programme.  
  [http://knowledgeforclimate.climateresearchnetherlands.nl/hotspots/schiphol-mainport](http://knowledgeforclimate.climateresearchnetherlands.nl/hotspots/schiphol-mainport)

- ACRP Synthesis Project – *Airport Climate Change Adaptation and Resilience*. In progress.  