

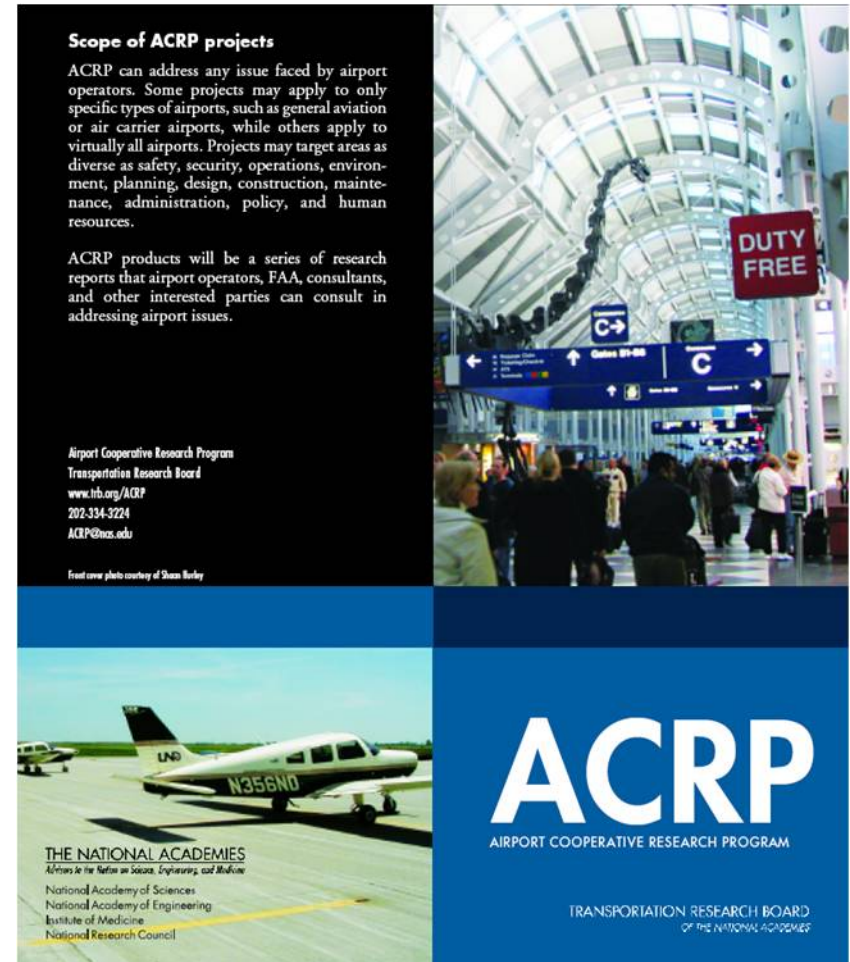
ACRP Project 02-09
*A Comprehensive Plan for a
Multi-Modal Noise and Emissions
Model*



Presented by
Thomas L. Connor

Airport Cooperative Research Program (ACRP)

- Authorized in 2003 under *Vision 100-Century of Aviation Reauthorization Act*
- FAA contracts with NAS through TRB
- Applied research on airport problems not addressed under existing federal research



The image shows the front cover of the ACRP report. It is divided into four quadrants. The top-left quadrant is black with white text. The top-right quadrant is a photograph of an airport terminal interior with a 'DUTY FREE' sign. The bottom-left quadrant is a photograph of a small propeller plane on a tarmac. The bottom-right quadrant is a solid blue background with white text.

Scope of ACRP projects

ACRP can address any issue faced by airport operators. Some projects may apply to only specific types of airports, such as general aviation or air carrier airports, while others apply to virtually all airports. Projects may target areas as diverse as safety, security, operations, environment, planning, design, construction, maintenance, administration, policy, and human resources.

ACRP products will be a series of research reports that airport operators, FAA, consultants, and other interested parties can consult in addressing airport issues.

Airport Cooperative Research Program
Transportation Research Board
www.trb.org/ACRP
202-334-3224
ACRP@nas.edu

Front cover photo courtesy of Shana Busby


ACRP
AIRPORT COOPERATIVE RESEARCH PROGRAM

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ACRP Projects


All ACRP

- Research Field 1 - Administration
- Research Field 2 - Environment
- Research Field 3 - Policy and Planning
- Research Field 4 - Safety
- Research Field 5 - Security
- Research Field 6 - Human Resources
- Research Field 7 - Design
- Research Field 8 - Construction
- Research Field 9 - Maintenance
- Research Field 10 - Operations
- Research Field 11 - Special Projects

ACRP Research Field 2 - Environment

Project Number	Project Title	Stage	Comments
ACRP 02-01	Alternative Aircraft and Airfield Deicing and Anti-Icing Formulations with Reduced Aquatic Toxicity and Biological Oxygen Demand	Active	
ACRP 02-02	Managing Runoff From Aircraft and Airfield Deicing and Anti-Icing Operations	Active	A preliminary draft report is expected in April 2008.
ACRP 02-03	Aircraft and Airport-Related Hazardous Air Pollutants: Research Needs and Analysis	Completed	Final report is being edited and will be published in August
ACRP 02-03A	Measurement of Gaseous HAP Emissions from Idling Aircraft as a Function of Engine and Ambient Conditions	RFP	
ACRP 02-04	Research Needs Associated with Particulate Emissions at Airports	Completed	Final report is being edited and will be published in early July
ACRP 02-04A	Summarizing and Interpreting Aircraft Gaseous and Particulate Emissions Data	Active	Preliminary Draft Final Report submitted March 2008. Final Report due mid-June 2008. Anticipated publication in mid-fall 2008.
ACRP 02-05	Guidebook on Community Responses to Aircraft Noise	Active	A progress meeting was held in February 2008. A preliminary draft report is expected in Fall 2008.
ACRP 02-06	Guidebook on Preparing Airport Greenhouse Gas (GHG) Emissions Inventories	Active	
ACRP 02-07	Handbook for Analyzing the Costs and Benefits of alternative Turbine Engine Fuels at Airports	Active	
ACRP 02-08	Guidance for Quantifying the Contribution of Airport Emissions to Local Air Quality	Pending	
ACRP 02-09	A Comprehensive Development Plan for a Multimodal Noise and Emissions Model	Pending	

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Advisers to the Nation on Science, Engineering, and Medicine

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ACRP Project 02-09

A Comprehensive Plan for a Multi-Modal Noise and Emissions Model

Background

- Environmental/economic effects from airports, highways, and rail are typically evaluated and mitigated separately
 - Fragmented approach = incomplete analyses = inefficient federal expenditures
 - Proposed model will facilitate integrated environmental assessments including total costs and impacts

Objective

- Model Development Plan (MDP)
 - Feasibility determination
 - Application and user consideration
 - Creation process, but actual development
- Modes include aviation, rail, transit, maritime, and roadways

ACRP Project 02-09 Panel

Chair

Renee L. Dowlin

Environmental Program Manager
Portland International Airport

TRB Staff Representative

Lawrence Goldstein

Members

Andrew S. Harris

President
Andrew S. Harris, Inc.

Sam Mehta

San Francisco International Airport

Laura D. Morland

Mead and Hunt, Inc.

Andrew Tron

Greater Toronto Airports Authority

John C. Williams

Senior Vice President
Ricondo and Associates, Inc.

William Willkie

CH2M HILL

Liaison Representatives

Christine Gerencher

TRB

Howard G. Aylesworth

Director, Aircraft Noise and Emissions
AIAA

Mark Ferroni

FHWA

Lourdes Maurice

FAA

James M. Potter

HUD

Nancy N. Young

Principal
Beveridge and Diamond, PC

Contract Project Team



wyle

Tom Connor (P.I.)
Brian Kim
Ken Plotkin
Troy Schultz

Ian A. Waitz Consulting
Dr. Ian Waitz of MIT

Grant Anderson Consulting
Grant Anderson



Gregg Fleming (Mgr.)
Andrew Hansen
Judith Rochat
Roger Wayson



Graduate Program in Acoustics

Dr. Anthony Atchley (Mgr.)
Dr. Joyce Rosenbaum

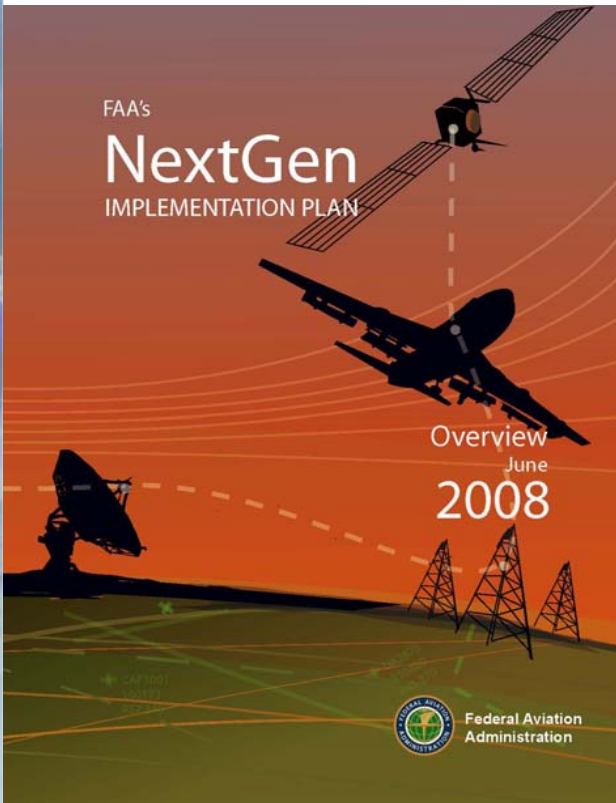


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Project Outline

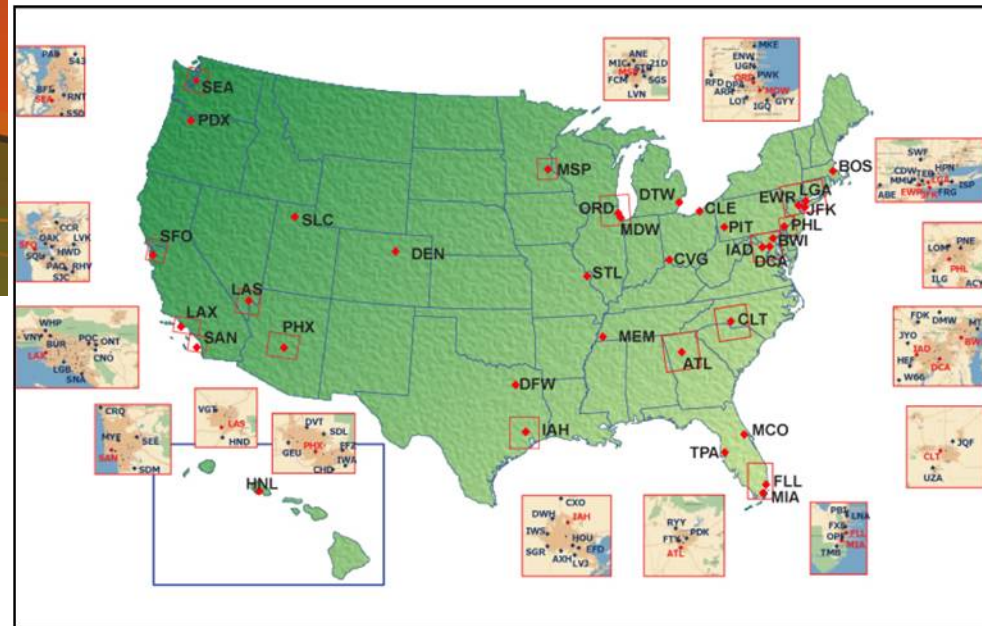
- Task 1 – Evaluate States of the Art
- Task 2 – Formulate Model Design Candidates
- Task 3 – Recommend Preferred Design
- Task 4 – Construct MDP
- Task 5 – Prepare Final Report & Submit MDP

Proposal Topics: Anticipated Applications



Metropolitan Areas Solution Set

“If existing airfield configurations remain constant without any capacity enhancements, 15 metropolitan area airports are projected to be in jeopardy. Significant population increases and economic growth in these areas will require additional airfield capacity by 2025. Proficient strategies and innovative approaches are critical. Airport expansion, technological improvements, regional solutions and **multi-modal efforts** represent some of these.”



[http://www.faa.gov/about/office_org/headquarters_offices/ato/publications/nextgenplan/]

Proposal Topics: State of Modeling

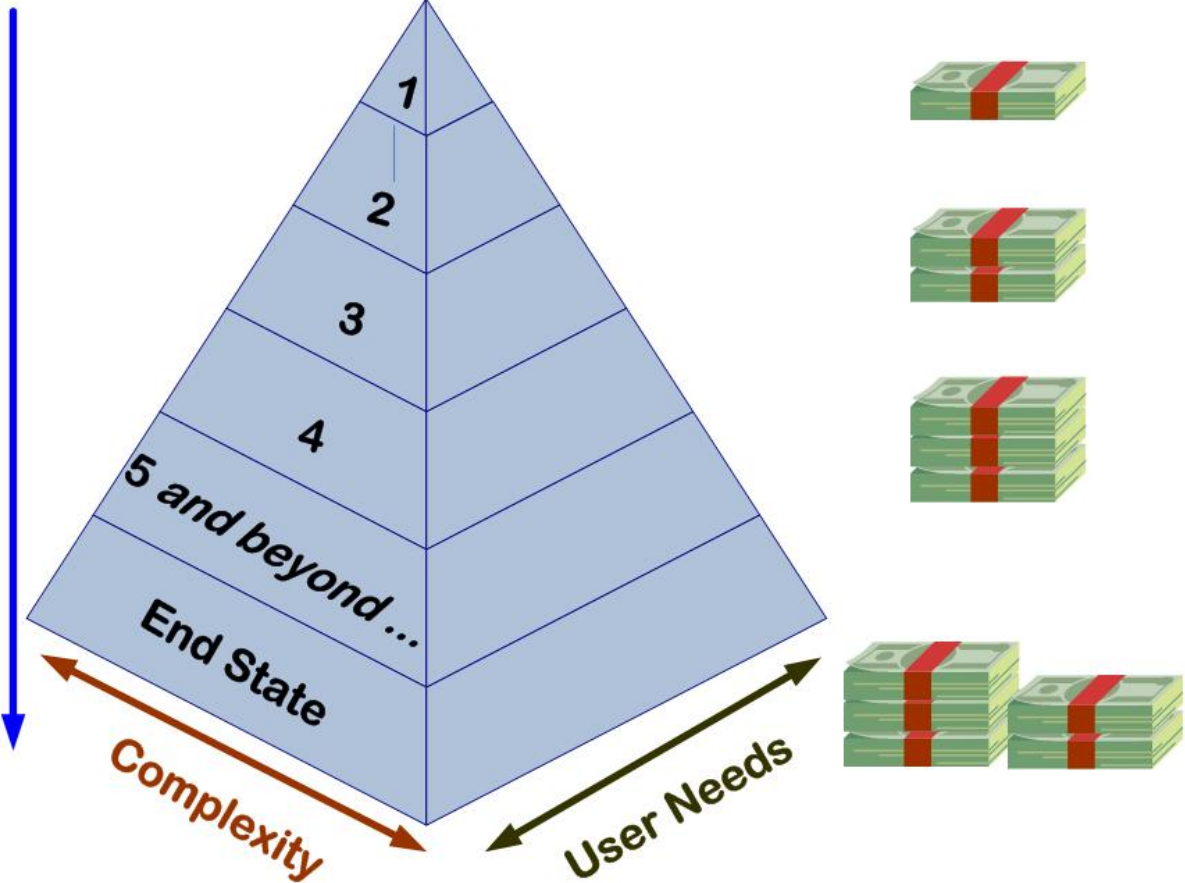
	Transportation Mode		
	Air	Ground	Water
Noise	AAM (NMSIM + RNM) AEDT HNM INM NIRS NOISEMAP	CREATE HICNM Horn Model HSRNOISE RCNM TNM	
Emissions	AEDT EDMS	AEDT EDMS EMIT MOBILE6 MOVES NONROAD2005	EPA AP-42 Emission Factors
Atmospheric Dispersion	AEDT EDMS (AERMOD)	CALINE3 CALINE4 CAL3QHC (CALPUFF AERMOD)	OCD Gaussian Puff-based models (e.g., CALPUFF)
Impact Valuation	APMT		
	BenMAP		

Proposal Topics: End State and Approach

“Think Big - Start Small - Act Now”

Build Sequence

Development Costs



Why am I here?

Seek viewpoints from broad cross-section of stakeholders and experts

- Who would use a multimodal noise and emissions model?
- At what stage of the environmental/design process would it be used?
- What are the requirements of a multimodal noise and emissions model?
- How would it be used?
- What output is desired?
- What value would the model bring to a transportation project?
- What is the desired end state?
- What hurdles face a multimodal noise and emissions model?

Contact Information



Tom Connor

wyle

703-415-4550 X19

tom.connor@wyle.com