Commercial Space Transportation (AST)

Commercial Space Transportation RE&D Program

To: REDAC NAS Ops Subcommittee

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PPT Portfolio Overview

• The Commercial Space Transportation RE&D portfolio focuses on enabling advances in critical areas such as:
  – Safe and efficient integration of increased commercial space launch and reentry activity into the national airspace
  – Advanced safety assessment methods
  – Advanced vehicle safety technologies and methodologies, and
  – Human space flight safety and physiology factors

• Funding enables maturation of concepts for follow-on use in methods, systems, operations and the regulatory framework

• Funding also sustains cooperative, innovative R&D within the FAA’s Commercial Space COE
Safe and Efficient Integration

• Initial R&D targeting critical needs, including:
  – Improving integration of launch sites (i.e., spaceports) into the NAS and its system of airports, including sites in the vicinity of major airports or complex airspace.
  – Developing and validating improved noise models for commercial space launch operations at inland launch sites, including spaceports co-located with airports.
  – Exploring the development of separation standards for improved airspace management of launch/reentry vehicles during non-explosive phases of flight.
Leveraging Research: Spaceport Siting & Integration

Enable applicants to explore trade-space considerations – identifying and quantifying key factors for integrating spaceports in proposed locations

• Exploratory tool proved viability of concept; further work needed to mature

• Factors include:
  - Inland/coastal
  - Proximity to airports/co-location
  - Proximity to critical infrastructure
  - Horizontal/vertical launch
  - Local airspace
  - Neighboring air & ship traffic
  - Local population density
  - Planned launch services
Leveraging Research: Noise

- Modelling & understanding of space vehicle noise, sonic boom, and other effects on environmentally sensitive areas and communities needs further work
  - Gather noise measurements, validate and modify models for rocket noise and sonic boom
Leveraging Research: Separation Standards

• Research to define separation standards specific to launch/reentry operations:
  
  • Separation of aircraft from airspace (aircraft hazard areas)
  
  • Separation of aircraft from launch/reentry vehicles
    • non-explosive flight phases like captive carry and gliding return
Moving Forward: Comprehensive Agency Plan to Integrate Commercial Space Operations into the NAS

• New FAA framework to target needed actions
  – “New Entrants Board” – Chaired by Deputy Administrator
  – Commercial Space Transportation – Executive Working Group

• Development of coordinated Agency plan will drive additional R&D needs
  – Initial Commercial Space Roadmap published in NAS Enterprise Architecture (EA)
    o Highlights potential gaps & shortfalls
  – Defining “Integration into the NAS”
  – Update Space Vehicle Operations ConOps
  – Prioritized goals, objectives: define updated, coordinated plans to address gaps & shortfalls
Discussion