

# Advanced Air Mobility

In Greater Houston

Moving from Hype to Infrastructure Execution

Sergio Roman, Director of Emerging Aviation Technology, TxDOT  
TAG Houston Virtual Coffee

# Agenda

- Introduction of the Electric Vertical Takeoff and Landing (eVTOL) and Advanced Air Mobility (AAM) integration Pilot Program (eIPP).
- Project Nexus – The Texas eIPP awarded proposal
- What it all means for Texas, Houston, and the nation.

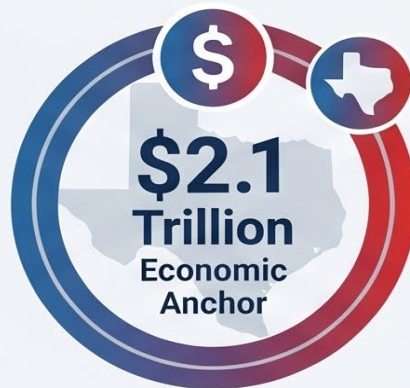


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# Project Nexus: Building the Interstate System for Advanced Air Mobility (AAM)



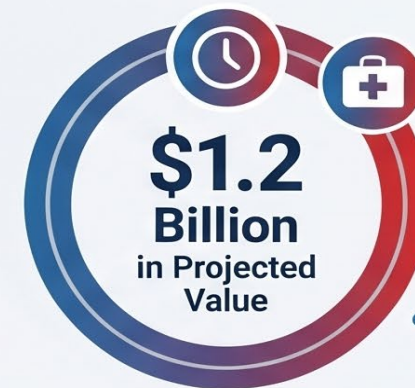
## Strategic Impact and U.S. Leadership



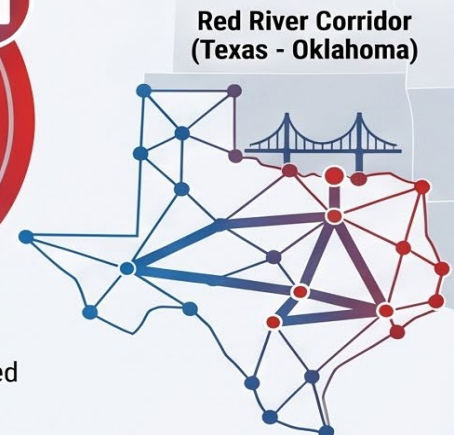
Focuses operations in the Texas Triangle, a region housing 70% of the population



Utilizes exclusively U.S. partners (Archer, Joby, BETA, Wisk) to support **45,000+ jobs**



Estimated five-year savings in commuter time and improved healthcare throughput



# PROJECT NEXUS: SCALING THE NATION FROM THE 3-YEAR TEXAS SUCCESS

## What Starts in the Lone Star State, Benefits all States

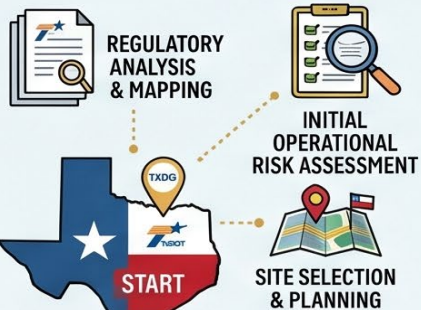


1 COMPLETE

2 COMPLETE

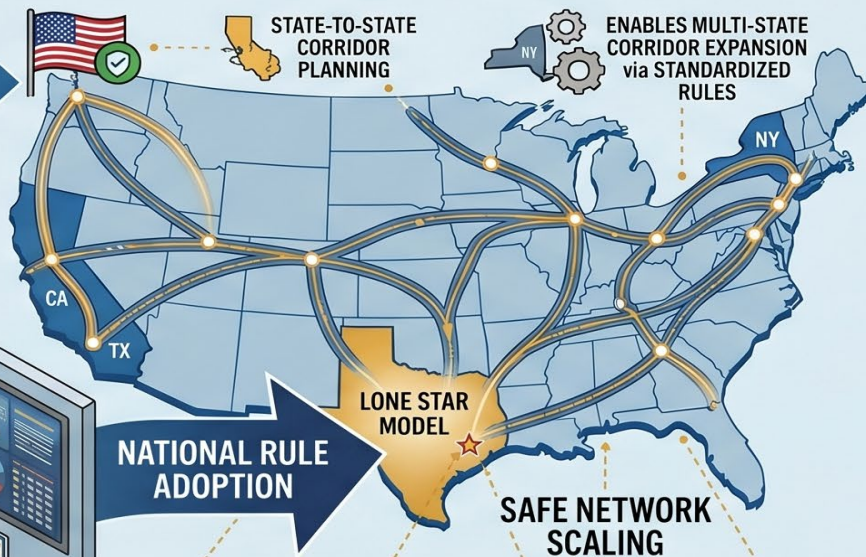
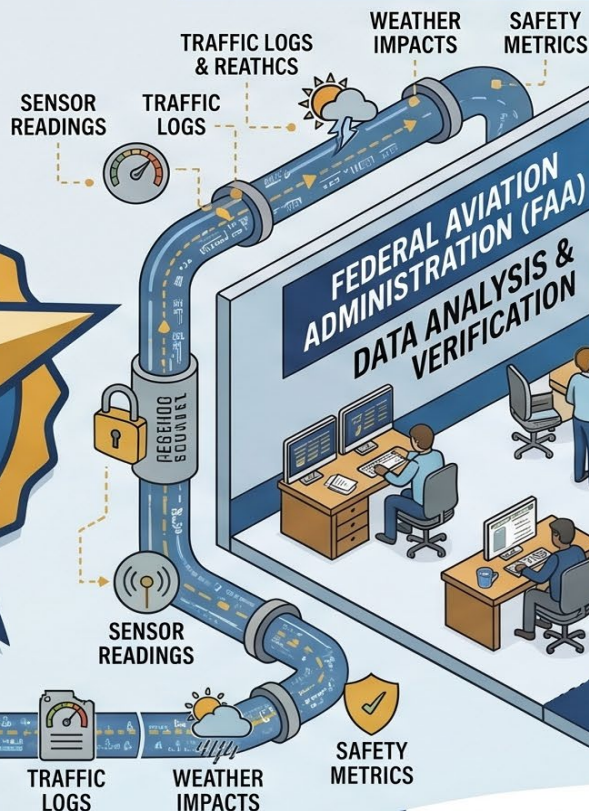
3 COMPLETE

TEXAS MODEL:  
VALIDATED &  
SUCCESSFUL  
CULMINATION



THE HARD-EARNED  
DATASETS OF YEARS 1-3

HARD-EARNED OPERATIONAL DATA FLOW



1. UNIFIED AIRSPACE FRAMEWORK & ATC RULES
2. CERTIFICATION STANDARDS (Aircraft & Vertiports)
3. WORKFORCE LICENSING STANDARDS
4. STANDARDIZED PERFORMANCE-BASED SAFETY RULES

WRITING THE FUTURE OF  
AAM REGULATIONS

KEY  
PAST: Phases 1-3 (DONE)  
PRESENT: Data Flow (ACTIVE)  
FUTURE: Scale & Regulation (IN-PROGRESS)

# Federal eIPP Selection & Momentum

## Why Texas was selected as a National Lead:

- **Strategic Connectivity:** The Texas Triangle offers a massive, high-demand industrial megaregion for scalable routing.
- **Infrastructure Readiness:** Proven success in public-private partnerships.
- **Climate Diversity:** Extreme heat and coastal weather provide a rigorous testing environment for battery thermal management.



# **Planning and Implementation**

## Current TxDOT Planning Efforts



**Corridor Analysis:** Identifying aerial pathways along state-owned highway rights-of-way (I-10, I-45) to minimize community impact.



**Utility Coordination:** Mapping existing grid feeds with ERCOT to identify high-capacity vertiport nodes.



**Vertiport Manuals:** Developing the first official TxDOT Siting and Design Manual for municipal adoption.



**MPO Engagement:** Integrating air transit into regional long-range transportation plans (H-GAC).

# PROJECT NEXUS: PHASE 1 – THE CRAWL STRATEGY

## RAPID OPERATIONAL ACTIVATION



**MOBILIZATION  
& PMO SETUP**

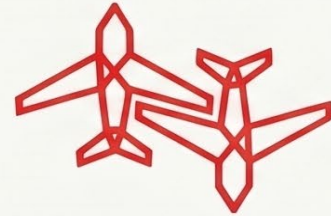
### DAY 90 ACTIVATION



Operations commence 90 days after OTA signature using existing, certified airport infrastructure.



**DIGITAL INTEGRATION  
& SENSORS**



### THE SURROGATE-FIRST MODEL

Utilizes certified Part 135 rotorcraft to validate routes and communications before eVTOL insertion.



**SURROGATE  
LAUNCH**

### MOBILE INFRASTRUCTURE EFFICIENCY



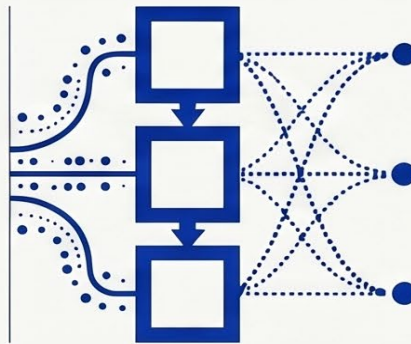
Employs “Plug-and-Play” mobile charging units to bypass construction and permitting delays.

## SAFETY AND REGULATORY FOUNDATION

### DATA SECURITY



Implements a “Zero Trust” architecture and BDI acoustic sensors for protected terminal airspace.



### A DATA FACTORY FOR THE FAA

Generates high-fidelity datasets on wake separation, noise signatures, and energy reserves.

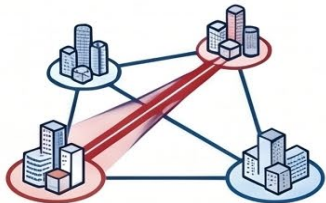
## BRIDGE TO WALK-RUN PHASES



Phase 1 proves ground readiness, enabling Phase 2 (Walk) eVTOL integration and Phase 3 (Run) autonomy.

# Project Nexus: Phase 2 – The “Walk” Toward Regional Integration

## REGIONAL SCALING & PUBLIC-GOOD OPERATIONS



**The Texas Triangle “Spine”  
High-speed Network**



**Medical & Emergency  
Logistics**



**Scaling Across  
State & Tribal  
Borders**



## DATA INSIGHTS FOR FAA RULEMAKING



### Pilot Certification & Workload Standards

Gathering empirical data on human-machine interfaces to inform future national pilot training requirements.



### Real-World Airworthiness & Propulsion

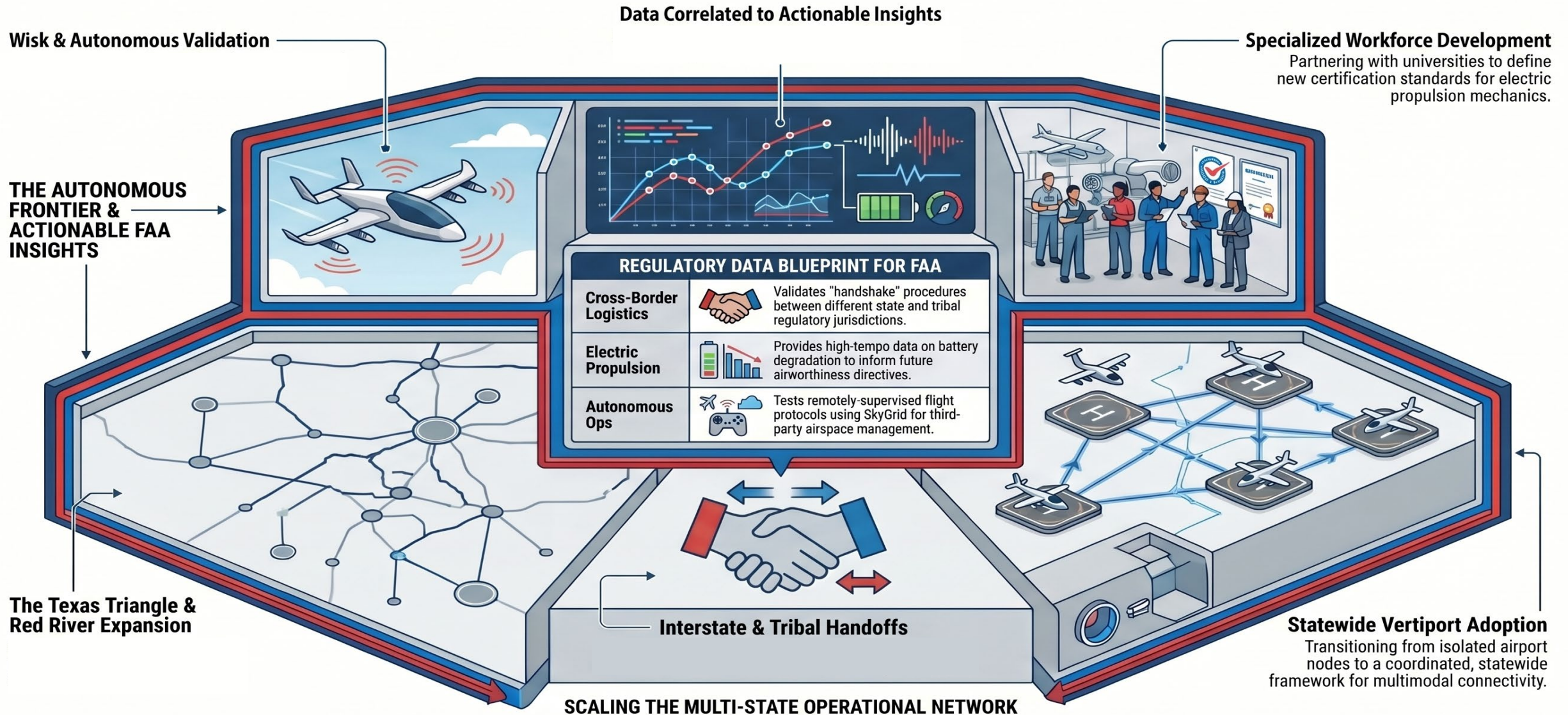
Monitoring battery degradation and electric engine reliability to provide an evidentiary basis for airworthiness.



### Defining Safe Altitudes & Visibility

Documenting VFR visibility and 14 CFR 91.119 suitability for powered-lift aircraft in transition modes.

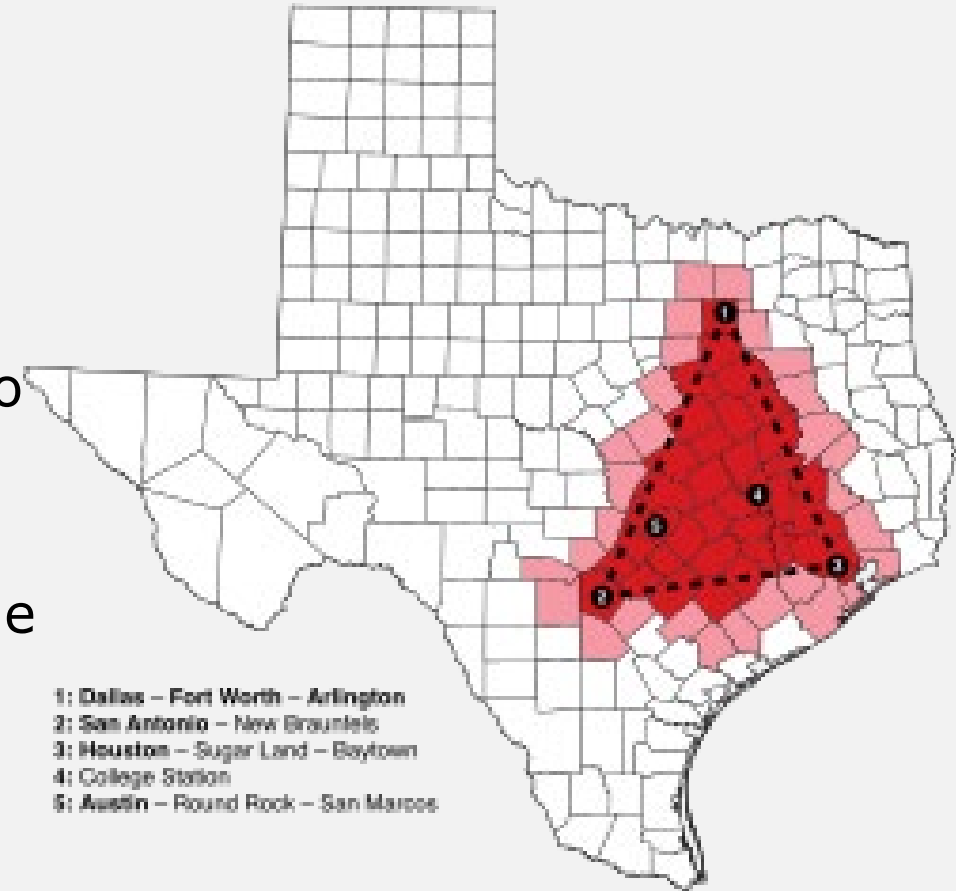
# Project Nexus Phase 3: The “Run” to Advanced Air Mobility



# Regional Coordination Opportunities

## The Houston Node Priority

- Houston represents the heavy industrial and medical heart of the state aerospace grid.
- **TMC Network:** Connecting Texas Medical Center to regional hubs.
- **Port Logistics:** Shuttling high-value cargo from the Port of Houston.
- **Triangle Link:** 75-minute HOU-DFW flights bypassing I-45 bottlenecks.



# Infrastructure: Power & Grid Capacity

## Peak Power Draw per Vertiport Node (Simulated)



Requirement: On-site Battery Energy Storage Systems (BESS) are mandatory to buffer the CenterPoint grid from rapid dynamic spikes during turnaround. **13**

# Operational Reality: Gulf Coast Climate

# 105°F

## The Houston Thermal Constraint

Extreme summer heat leads to a **15% reduction** in lift efficiency due to high density altitude.

$$P_{req} = \sqrt{\frac{T^3}{2\rho A}}$$

Lower air density ( $\rho$ ) requires significantly higher rotor power.

# Stakeholder coordination Matrix

| STAKEHOLDER    | CORE RESPONSIBILITY | CRITICAL DELIVERABLE                |
|----------------|---------------------|-------------------------------------|
| Airports (HAS) | Airside Integration | Vertiport Overlay Plans (IAH/Hobby) |
| MPOs (H-GAC)   | Regional Planning   | Multi-modal Routing Integration     |
| Local Govts    | The "Ground Game"   | Zoning & Building Code Updates      |
| Private Sector | Fleet & Operations  | AAM Type Certification & Capital    |

## Call to Action: Local Policy



### 1. Modernize Code

Proactively adopt NFPA 418 standards to allow safe, high-voltage battery storage and charging in urban footprints.



### 2. Define Zoning

Establish clear land-use definitions for vertiports as a distinct classification to bypass case-by-case gridlock.



### 3. Permitting

Create a streamlined, repeatable permitting track for electrical utility interconnections and physical decks.



Sergio Roman

Director

Emerging Aviation Technology

[Sergio.roman@txdot.gov](mailto:Sergio.roman@txdot.gov)

512-239-9284



William Graffis

Emerging AVN Tech Coordinator

Emerging Aviation Technology

[William.Graffis@txdot.gov](mailto:William.Graffis@txdot.gov)

512-979-5685



Travis Baxter

Emerging AVN Tech Coordinator

Emerging Aviation Technology

[Travis.Baxter@txdot.gov](mailto:Travis.Baxter@txdot.gov)

737-825-1573