



# eVTOL Mini-Lab

Urban Air Mobility — Interactive Demos

## eVTOL Mini-Lab — User Guide

The eVTOL Mini-Lab is an interactive Streamlit app illustrating Urban Air Mobility concepts through three compact modules: City Hop Planner, Perception Sandbox, and Health Monitor. A sidebar HUD displays live Health, Remaining Energy, and Mission Status.

### 1) City Hop Planner

Plan hops on a city grid with No-Fly Zones. Uses A\* pathfinding to compute a safe route. Reports hover and cruise power, required energy, and GO/NO-GO decision with reserve. Playback animates the flight and Mission Rating blends efficiency and Health.

### 2) Perception Sandbox

A toy lidar demo. Configure number of obstacles, field size, lidar range, safety radius, ray count, and resolution. Visualization shows ray hits, nearest obstacle, and brake/avoid flag.

### 3) Health Monitor

Predictive maintenance scoring normalized to 0–100. Inputs: Flight hours, Charge cycles, Max pack temperature, and Vibration. Quick actions simulate maintenance. Projected score forecasts impact of added usage. Live Health feeds the HUD and Mission Rating.

### 4) Sidebar HUD

Persistent display of Health, Remaining Energy, and Mission Status across all modules.