

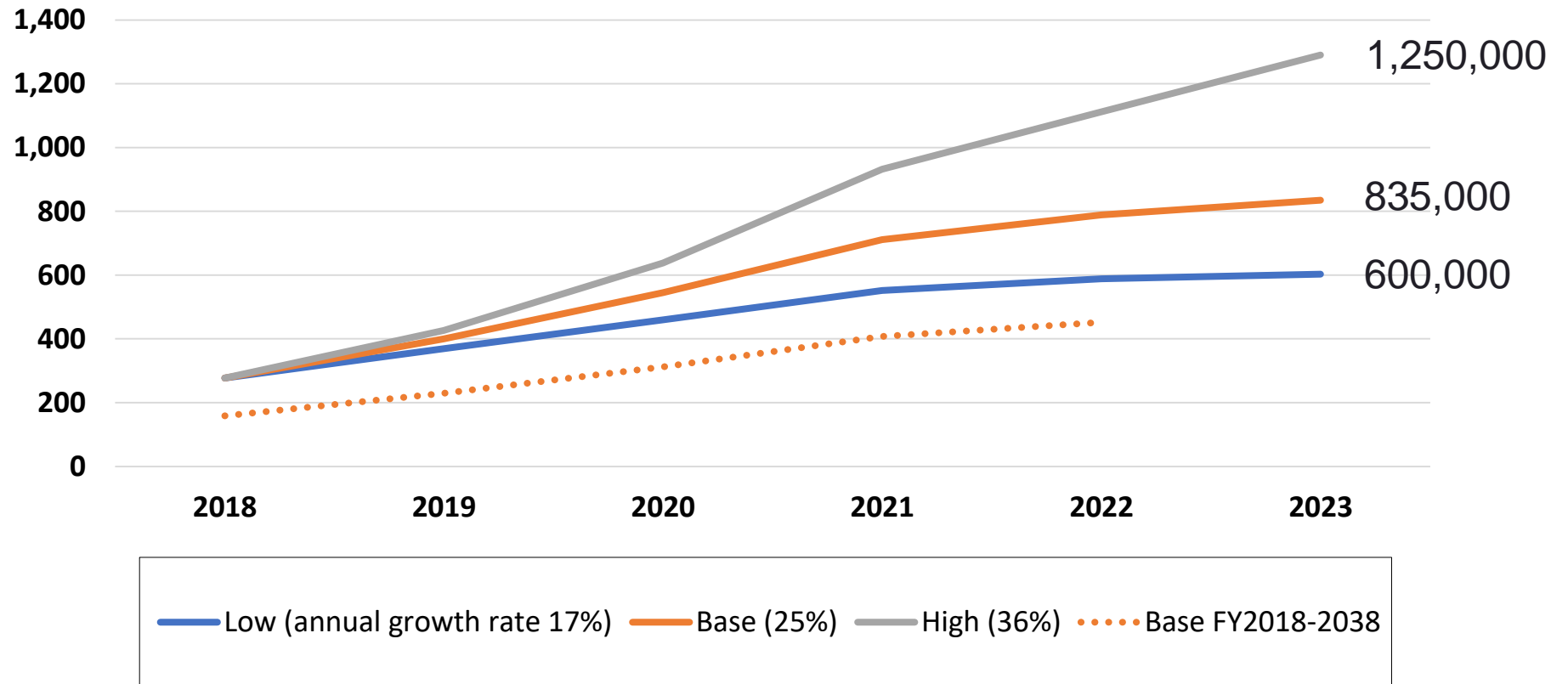
Exploring the Business Opportunity for Droneports



Cimarron Capital Partners, LLC

U.S. Non-Model Fleet Forecast

UAS in thousands



FAA Aerospace Forecast, FY 2019-2039



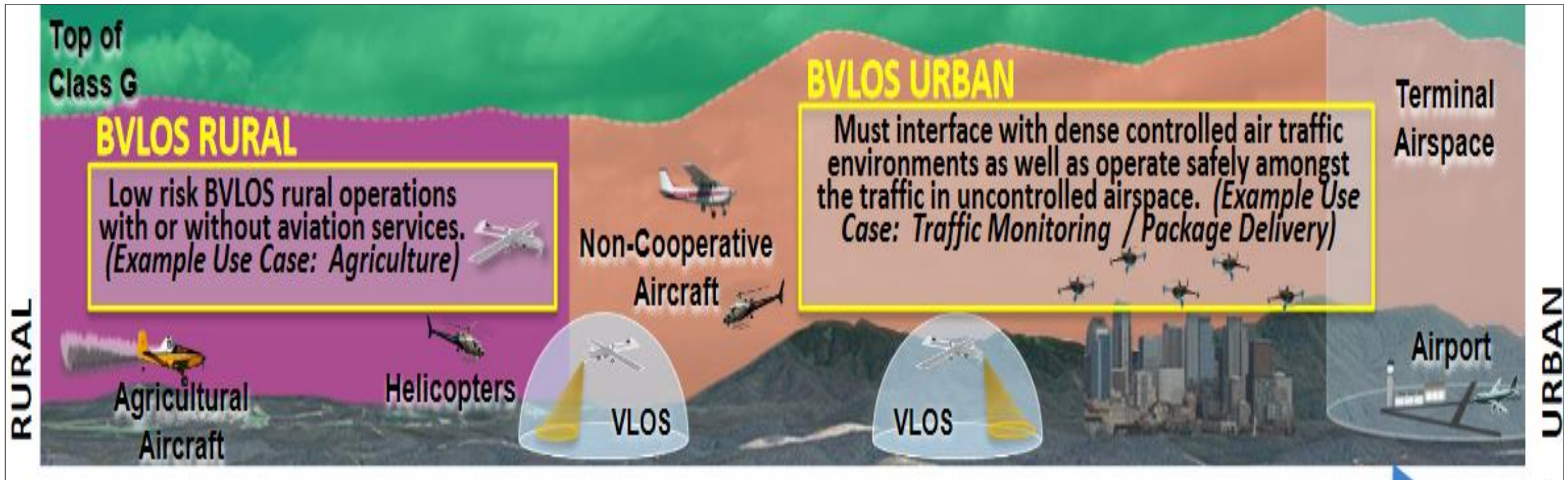
Visual Line of Sight -- the current standard



NASA May 2017, <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20170006091.pdf>



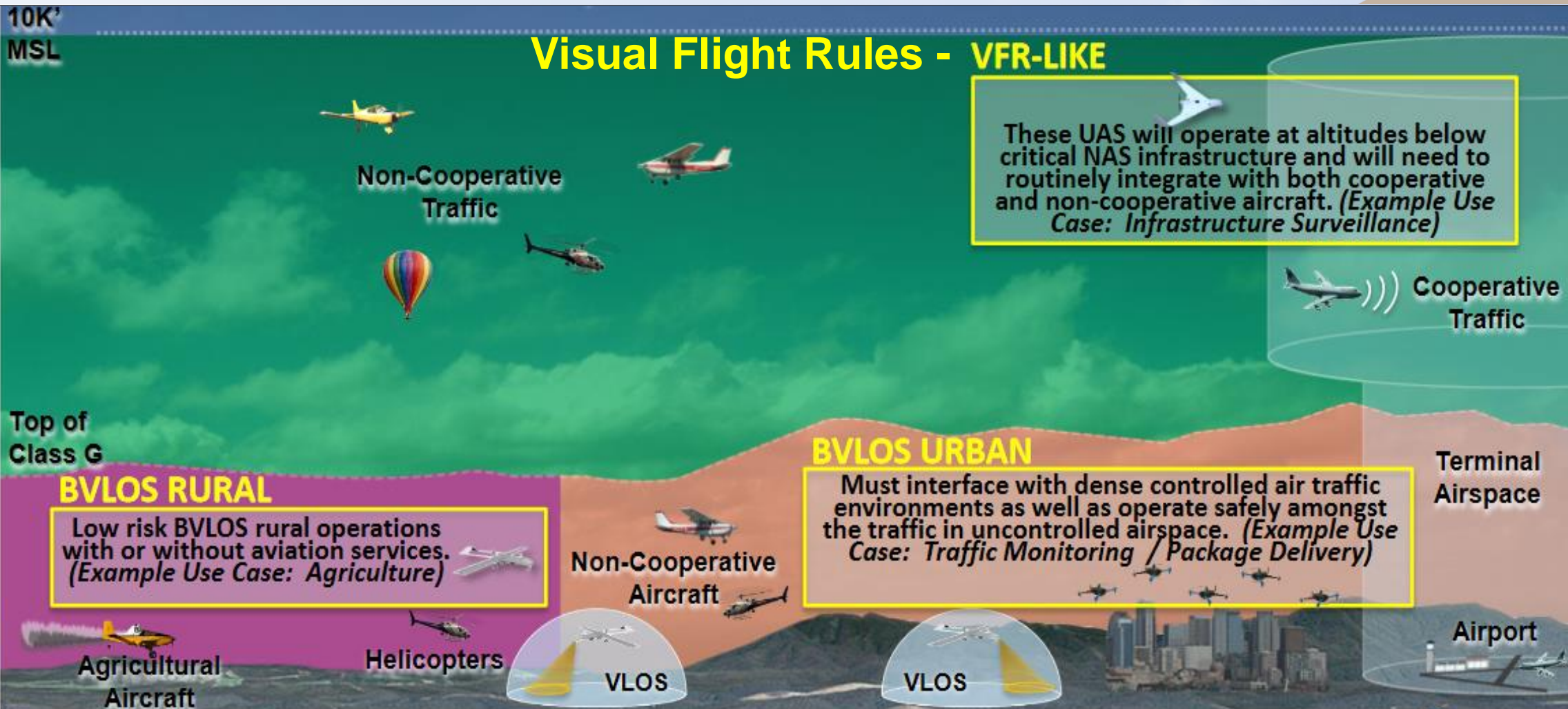
Visual Line of Sight to Beyond Visual Line of Sight



NASA May 2017, <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20170006091.pdf>



Emerging Commercial UAS Operating Environments (OE)





Emerging Commercial UAS Operating Environments (OE)

Instrument Flight Rules - IFR-LIKE

FL-600

UAS will be expected to meet certification standards and operate safely with traditional air traffic and ATM services. (Example Use Case: Communication Relay / Cargo Transport)



18K' MSL

Non-cooperative Traffic

Cooperative Traffic

10K' MSL



Non-Cooperative Traffic

VFR-LIKE

These UAS will operate at altitudes below critical NAS infrastructure and will need to routinely integrate with both cooperative and non-cooperative aircraft. (Example Use Case: Infrastructure Surveillance)



Cooperative Traffic

Top of Class G

BVLOS RURAL

Low risk BVLOS rural operations with or without aviation services. (Example Use Case: Agriculture)



Non-Cooperative Aircraft

BVLOS URBAN

Must interface with dense controlled air traffic environments as well as operate safely amongst the traffic in uncontrolled airspace. (Example Use Case: Traffic Monitoring / Package Delivery)



VLOS



VLOS

Terminal Airspace

Airport

RURAL

URBAN

Drone Services Forecast

Examples from NASA (July 2019) representing 790,000 missions per day by 2024.

High risk - Flights in unsegregated airspace below 10,000 ft over rural and populated areas.

Low risk - Flights in Class G airspace and other low-risk rural locations.

Very low risk - Flights within Visual Line of Sight, below 400 ft, partially extended by Far Part 107 waivers.

Use case	Missions per day at saturation	Safety Risk
Construction	47,000	Very low
Wind Turbines	140	Very low
Power Lines	270	Low
Insurance Inspection	13,800	Low
Pipeline	3,900	Low
Surveying, Mapping	15,900	Low
Agricultural Survey and Inspection	2,000,000	Very low
Fence Line Security	30,000	Very low
Rapid Aerial Communications	790	Very low
Rail	1,500	Low
Tornado Watching, Flood Damage	1,900	Low
Weather Monitoring	620	High
Disaster and Forest Fire Response	560	High
Rural Package Delivery	5,800,000	Low

Values rounded. Source: ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20190007020.pdf

Drone Services Forecast

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Use case	10% of market	90% of market	Missions per day at saturation	Safety Risk
Construction	2017	2020	47,000	Very low
Wind Turbines		2025	140	Very low
Power Lines	2018	2022	270	Low
Insurance Inspection		2023	13,800	Low
Pipeline	2019	2022	3,900	Low
Surveying, Mapping		2022	15,900	Low
Agricultural Survey and Inspection		2022	2,000,000	Very low
Fence Line Security		2025	30,000	Very low
Rapid Aerial Communications	2020	2024	790	Very low
Rail		2025	1,500	Low
Tornado Watching, Flood Damage		2026	1,900	Low
Weather Monitoring	2022	2030	620	High
Disaster and Forest Fire Response	2023	2028	560	High
Rural Package Delivery	2024	2032	5,800,000	Low

Values rounded. Source: ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20190007020.pdf



Rural Package Delivery



UAS Demand:

