Launch Mission Execution Forecast

Mission: Falcon 9 mPOWER-E
Issued: 16 Dec 2024 / 1130L (1630Z)
Valid: 17 Dec 2024 / 1559 – 1726L (2059 – 2226Z)

Forecast Discussion: Strong high pressure moving off the coast of New England today will settle into the Central Atlantic through mid-week, with the axis to the north of the Spaceport. This feature will block the approaching easterly wave as it moves west, pushing it into the state on Tuesday. The arrival of this trough brings deeper moisture and instability, with a higher coverage of onshore moving showers, and occasional lightning is not out of the question. Most models show coverage peaking in the late afternoon and evening, potentially overlapping at least the latter part of the primary launch window Tuesday afternoon. The main weather concerns with this activity will be the Cumulus Cloud Rule and Surface Electric Fields Rule.

Flow veers to the southeast as the high slides further east and the next front starts to move into the southeastern US on Wednesday. The more southerly component will shift the remnant trough and the highest moisture away from the area. The forecast question will be how quickly or how far this feature shifts, as the drier the conditions, the lower shower coverage will likely be. For now, models suggest enough moisture and instability lingering for the backup window Wednesday afternoon for the threat of Cumulus Cloud Rule and Surface Electric Fields Rule violations to be only slightly lower than Tuesday.

Launch Day

Probability of Violating Weather Constraints[1]

45%

Primary Concerns: Cumulus Cloud Rule, Surface Electric Fields Rule

Weather Conditions		Clouds				Additional Risk Criteria[2]	
		Type	Coverage	Base (ft)	Tops (ft)		
Weather/Visibility:	Sct. Showers / 7 mi.					**Upper-Level Wind Shear**:	Low
Temp/Humidity:	72°F / 90%	Cumulus	Broken	3,000	12,000	**Booster Recovery Weather**:	Low
Liftoff Winds (200'):	070° 12 - 17 mph					**Solar Activity**:	Low

24-Hour Delay

Probability of Violating Weather Constraints

35%

Primary Concerns: Cumulus Cloud Rule, Surface Electric Fields Rule

Weather Conditions		Clouds				Additional Risk Criteria	
		Type	Coverage	Base (ft)	Tops (ft)		
Weather/Visibility:	Sct. Showers / 7 mi.					**Upper-Level Wind Shear**:	Low
Temp/Humidity:	72°F / 90%	Cumulus	Broken	3,000	10,000	**Booster Recovery Weather**:	Low
Liftoff Winds (200'):	130° 12 - 17 mph	Cirrostratus	Broken	25,000	30,000	**Solar Activity**:	Low

Notes

1. *The Probability of Violation (PoV) is the chance of a local safety or customer constraint violation occurring any random time during the launch window.*
2. *Additional Risk Criteria, which are not included in the PoV, are mission-specific constraints that may not include all phenomena within each risk factor.*

See https://www.patrick.spaceforce.mil/Portals/14/Weather/LaunchFAQ.pdf for more information

Next Forecast Will Be Issued	As Needed