DELHI AIR QUALITY · MONITORING FORENSIC

When Delhi's air monitors went dark

Diwali night, 20–21 October 2025 — what the hourly record shows

On Diwali night, Delhi's air-quality network stopped reporting at exactly the moment firecracker pollution peaked. Reading the raw hourly feed station by station, PM2.5 coverage fell from about 40 stations to as few as **12** between midnight and 3 AM, then recovered by morning — a collapse timed to the peak, not seen on an ordinary night.

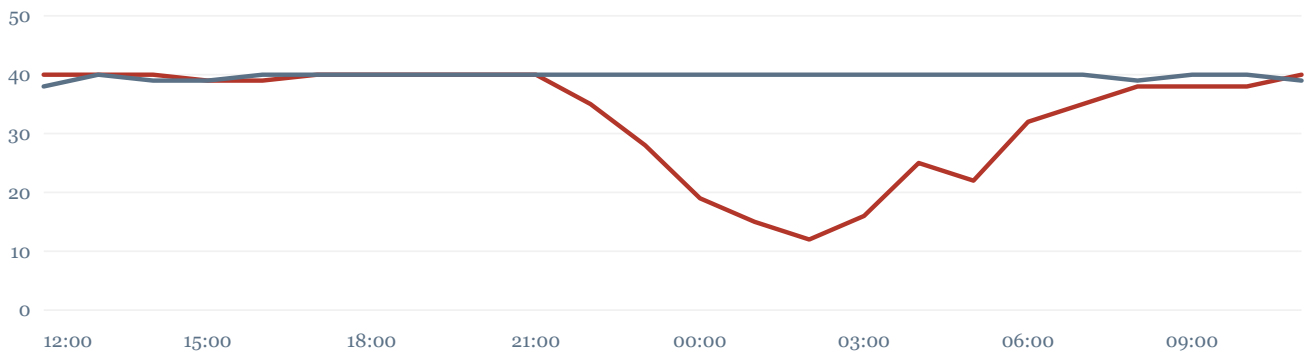
12 of ~40
PM2.5 stations still reporting at 2 AM on Diwali night — down from ~40

~7 hours
the network ran degraded (below 30 stations) — 10 PM to 6 AM, the exact firecracker window

↓ low
so the official Diwali AQI is **biased downward** — it missed the peak hours it most needed to record

Stations reporting PM2.5, hour by hour (noon to noon)

■ Diwali night — station coverage collapses through the firecracker peak, then recovers. ■ A normal night a week earlier holds steady.



Each point is the number of Delhi PM2.5 monitoring stations that reported a valid reading in that clock-hour, from the CREA compilation of CPCB/DPCC data. The normal night is the same hours one week earlier.

Why a data gap lowers the number — and what it means

How the daily AQI is built. Delhi's daily figure is a 24-hour average, and a station counts for the day if it reported at least 16 of 24 hours. So a monitor that went blank only during the 6-hour firecracker peak still counts toward the daily average — but with its **highest hours missing**. When a large share of stations lose exactly their peak hours, the city's daily average is pulled **below** the true level. The gap doesn't just add noise; it systematically understates the worst night of the year.

What the numbers showed. The observed city AQI for the Diwali-night window still rose to about 288 — yet the true figure was almost certainly higher, because the dirtiest hours at many stations were never recorded. Our weather-correction model then reads even that suppressed spike as calm-weather trapping (it has no way to see firecracker emissions), so a naïve "weather-corrected" comparison would wrongly suggest Diwali 2025 was *cleaner*. It was not a real improvement — it was a measurement failure. For that reason our year-on-year report **excludes 20–21 October** rather than report an improvement the data cannot support.

The wider record. The Supreme Court was told on 3 November 2025 that only about **9 of 37** monitoring stations had provided continuous data through the Diwali period, and directed the Commission for Air Quality Management and the CPCB to explain. The matter is also before the National Green Tribunal, whose amicus curiae cited the data gaps alongside videos of water tankers sprinkling near the Anand Vihar monitor — which, if aimed at a station, can suppress its local dust reading without cleaning the surrounding air.

What we can and cannot say. The hourly data **proves** an extensive, peak-timed reporting failure and, at Anand Vihar, a blackout right through the peak. It is **consistent with** the concerns of tampering and targeted sprinkling raised before the Court and the Tribunal — but it does not, by itself, prove the instruments were deliberately switched off or altered; power, communication, calibration or overload faults could also produce it. What is not in doubt is the consequence: **Delhi's official Diwali-night air quality understates what the city actually breathed.**

Method. Station counts are distinct Delhi PM2.5 stations with a valid hourly observation, from the CREA compilation of CPCB/DPCC raw hourly data (the same source as our daily report). "Biased low" follows from the 16-of-24-hour daily rule combined with peak-hour dropout; the de-weathering is the AQI_Analysis random-forest model. **Sources (reporting).** Supreme Court proceedings, 3 Nov 2025 (India Today; Hindustan Times); National Green Tribunal, OA 687/2023 (amicus note); ground reports (The Quint; Financial Times). All figures recomputed from source at build time.