Statistical Arbitrage Report — XOM–USO (5-min, RTH, 2023+)

Strategy: Intraday mean-reversion on residual spread between XOM and USO.

Execution: Open when |Z| > entry, flat when |Z| < exit; intraday positions only (flatten bef

Transaction cost: 0.03% per side; No look-ahead (signals use only past data).

Parameters: entry=2.6σ, exit=0.6σ, Z-window=12 trading days,

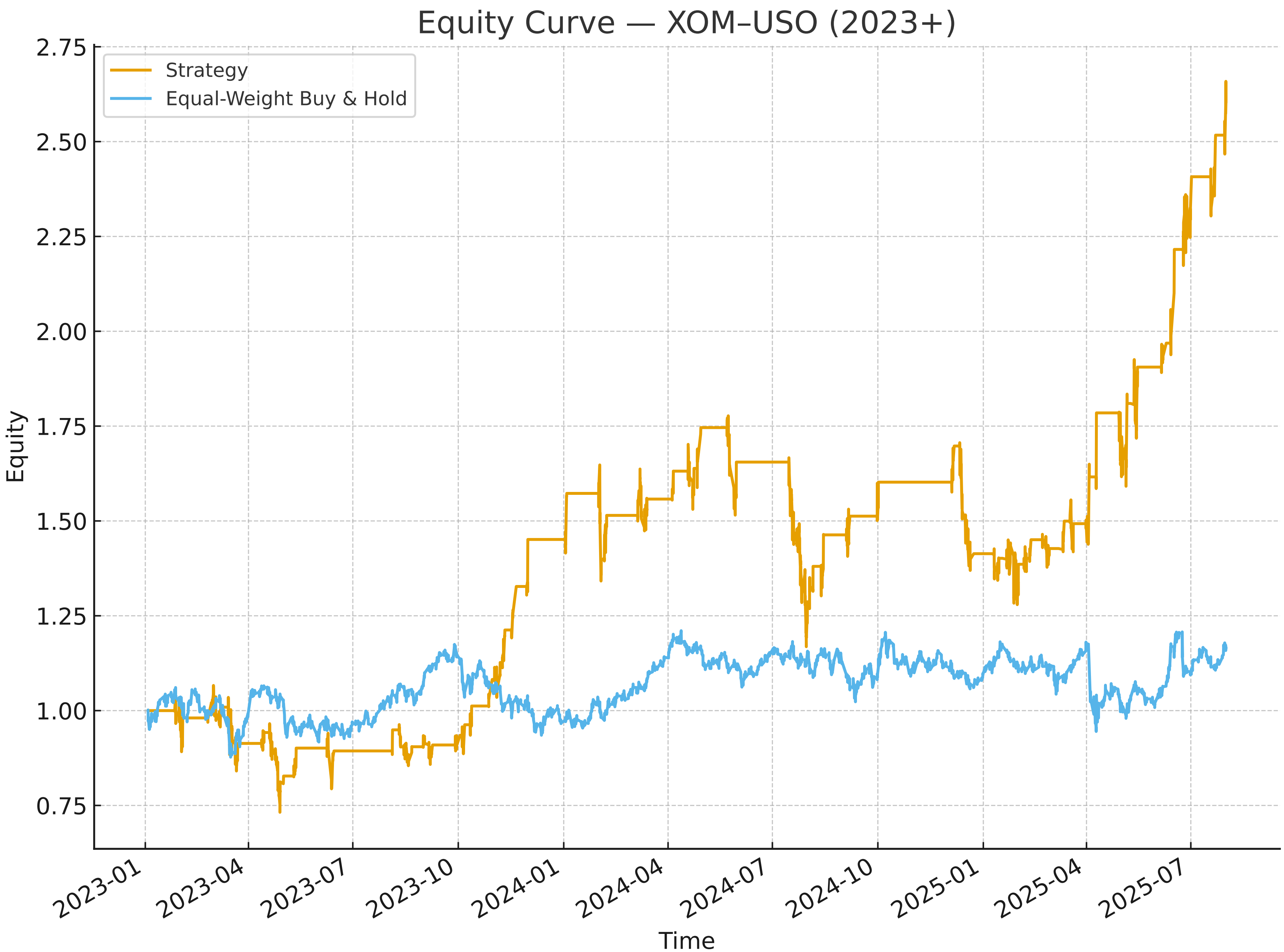
RLS decay (λ)=0.999, volatility target=7.0% daily,

RLS hedge ratio on log-prices, volatility scaling by 1-day rolling realized vol.

Full Sample: 2023-01-03 09:45:00 → 2025-07-31 15:55:00 | Bars: 48281

Train: 2023-01-03 09:45:00 → 2024-10-18 15:05:00 | Bars: 33796

Test: 2024-10-18 15:10:00 → 2025-07-31 15:55:00 | Bars: 14485

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Metrics (Gross, after fees)
Full:  Ann=0.4770  Sharpe=1.11  MaxDD=0.3425  MAR=1.39  WinRate(M)=54.84%
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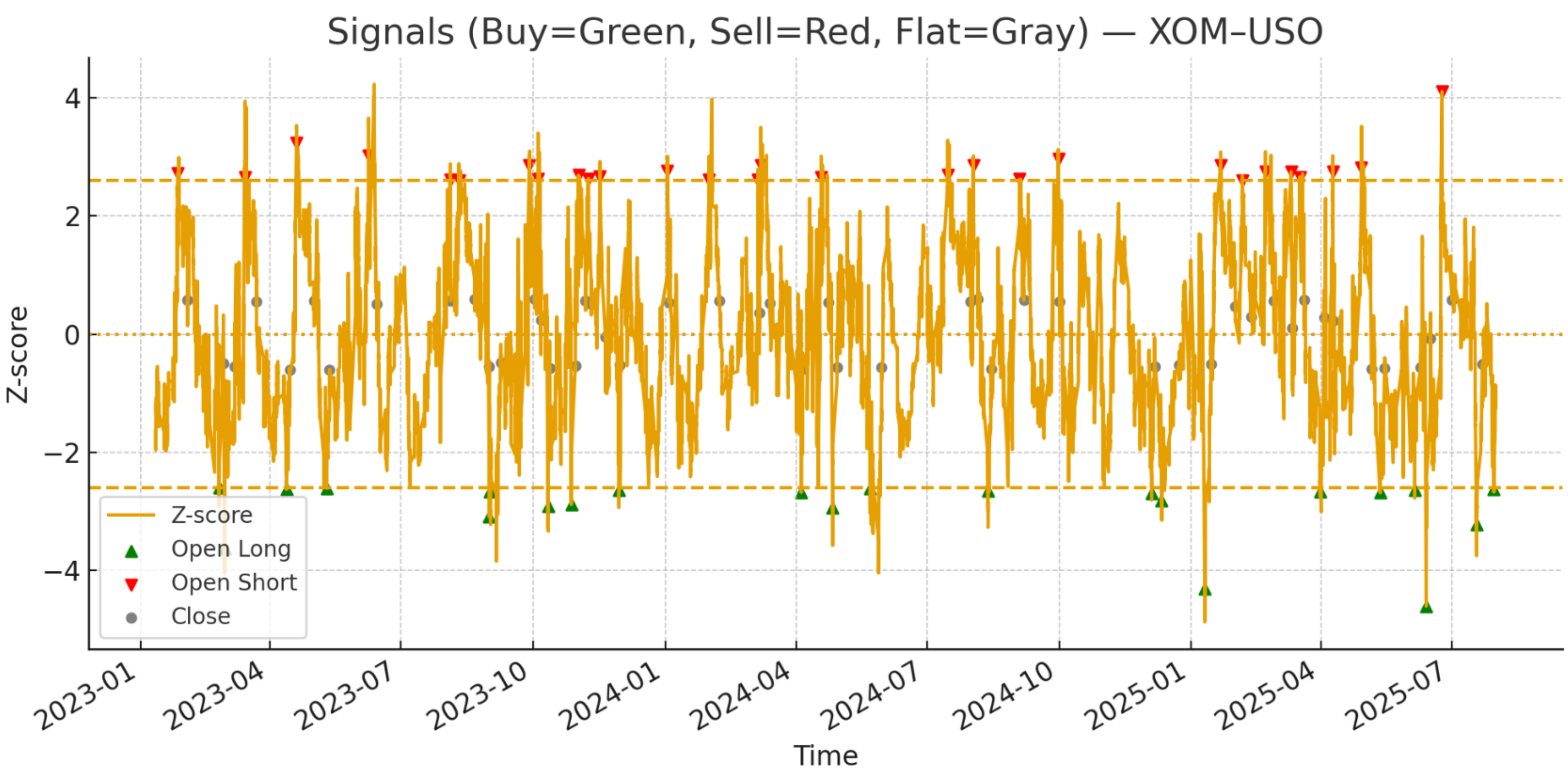
Signals — Buy (Green up), Sell (Red down), Flat (Gray dot)



Monthly Trade Frequency