

ACS Pricing Platform — Summary of Changes

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1. New Data Source

- Switched to '1202_2001_ACS Pricing simulator.xlsx' as primary source
- Historical data: Monthly_prices_forecast_direct sheet (2022–2025, 48 monthly obs.)
- Future projections: Generated data sheet (2026–2035, yearly averages)
- Variables: ACS (4 regions), S (2 markets), Smooth S (2), DAP, Petcoke, Clinker

2. Product Variable Selector

- Replaced Commodity/Region dropdowns with a single Variable dropdown
- Lists all 9 variables from the Monthly_prices_forecast_direct sheet
- Each variable auto-maps to the correct CRU outlook region for MC simulation

3. Correlation Engine (`correlation_engine.py`)

- Pearson correlation matrix computed from 2022–2025 monthly data (7 variables)
- When ACS price changes in MC scenarios, correlated variables adjust:
 - S_ME: $\rho = 0.69$ | S_NA: $\rho = 0.77$ | DAP: $\rho = 0.87$
 - Adjustment = correlation \times ACS_change $\pm 10\%$ noise
- Petcoke & Clinker are never auto-adjusted (frozen variables)

4. Smooth Yearly-to-Monthly Expansion

- Replaced step-function expansion with PCHIP cubic interpolation
- Yearly averages anchored at mid-year (July), smooth curve between years
- Eliminated +7.3% jump at Q1 2035 boundary → now only +0.5% (smooth)

5. Decision Section Data Pipeline

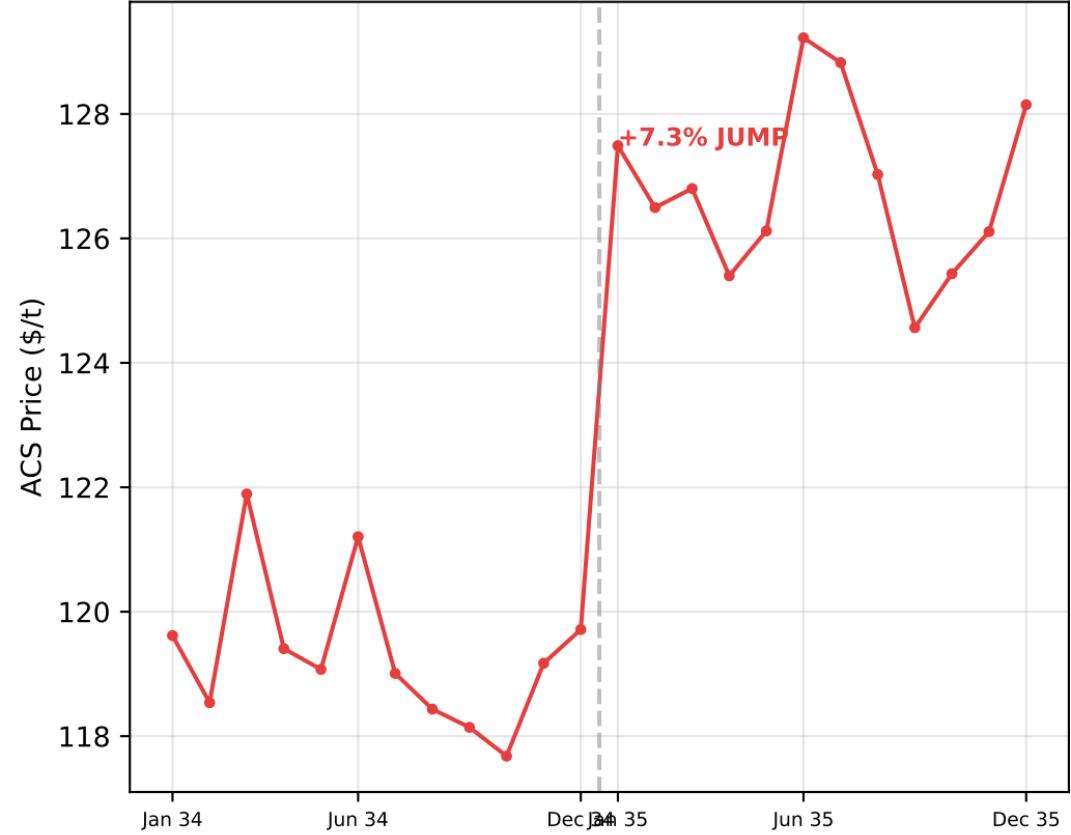
- MC scenarios now use real generated data instead of synthetic proxies
- Previously: S = ACS $\times 0.55$, DAP = constant (hard-coded)
- Now: S, DAP, Petcoke, Clinker from Excel-based projections + correlation
- Risk analysis loop (200 MC paths) also uses the real data pipeline

6. Deliverables

- `correlation_report.pdf`: one-page heatmap + key correlation insights
- `acs_pricing_platform.zip`: complete project for local execution
 - `pip install -r requirements.txt && streamlit run app.py`

Q1 2035 Jump Fix — Before vs After

BEFORE: Step Function



AFTER: PCHIP Interpolation

