The Heating Oil HO Shock Cluster State Signal

Why HO Shock Cluster State delivers a 1.56 pp spread on NYMEX Heating Oil forward 60-day returns via the multi-factor shock cluster detector channel.

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What this signal is

Elevated shock cluster state signals coincident spikes across multiple Heating Oil regime inputs (vol, momentum, supply disruption, macro stress) that historically mark crisis-driven price acceleration on NYMEX Heating Oil; compressed state signals calm regime.

The composite is bounded between minus one and plus one through tanh. Positive readings reflect the shock active regime state; negative readings reflect the calm regime state.

Today the composite reads +0.120 in the Normal band after 160 trading days in the current phase.

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How the inputs compose

Elevated shock cluster state signals coincident spikes across multiple Heating Oil regime inputs (vol, momentum, supply disruption, macro stress) that historically mark crisis-driven price acceleration on NYMEX Heating Oil; compressed state signals calm regime. The signal is a composite shock detector combining Heating Oil vol z-score, momentum z-score, PADD3 utilization z-score, and VIX z-score, bucketed into a shock-cluster state.

State thresholds plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme). Phase +1 at composite above +0.3, phase −1 below −0.3. Target: NYMEX Heating Oil front-month continuous.

What the state-conditional returns have actually done

Computed over 9,274 daily observations from the live-window sample. The baseline NYMEX Heating Oil forward 60-day return is mean plus 2.88 percent and median plus 1.55 percent across the live-window sample.

> **Baseline NYMEX Heating Oil forward 60-day return:** mean plus 2.88 percent / median plus 1.55 percent across the live-window sample.

Phase-conditional pattern on NYMEX Heating Oil forward 60-day returns: Phase +1 (Shock active, 4,599 days / 50 percent): plus 2.76 percent fwd60d, edge −0.11 pp above baseline. Phase 0 (Normal, 2,617 days / 28 percent): plus 1.92 percent fwd60d, edge −0.96 pp. Phase −1 (Calm, 2,058 days / 22 percent): plus 4.33 percent fwd60d, edge +1.45 pp.

1.56 pp Phase +1 minus Phase −1 spread via the multi-factor shock cluster detector channel.

Three cases that frame how to read the signal

Case 1: Shock active, 2020 COVID multi-factor crisis

Shock cluster peaked through March 2020 as COVID triggered simultaneous vol-spike, demand-shock, and macro-stress. Signal held Phase +1 territory into Q2 2020 recovery.

Case 2: Shock active, 2008 Lehman crisis

Shock cluster spiked through Q4 2008 as Lehman collapse triggered forced deleveraging across commodity + credit + vol. Signal held Phase +1 territory.

Case 3: Calm, 2017 extended low-vol regime

Shock cluster compressed through 2017 as extended low-vol regime held across markets. Signal held Phase −1 calm territory.

How to use the signal today

Composite is currently reading +0.120 in the Normal band. Phase Neutral firing for 160 trading days.

Pair with companion Heating Oil signals listed in the Related section for stacked conviction.

Reader rule: Phase +1 firings reflect shock active regime via the multi-factor shock cluster detector channel. Phase −1 firings reflect calm regime. The 1.56 pp spread demonstrates the signal has directional edge via the stated channel.

Methodology notes

The signal is a composite shock detector combining Heating Oil vol z-score, momentum z-score, PADD3 utilization z-score, and VIX z-score, bucketed into a shock-cluster state. State thresholds plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme). Phase +1 at composite above +0.3, phase −1 below −0.3. Target: NYMEX Heating Oil front-month continuous.

Validation computed on 9,274 post-warmup daily observations. Phase +1 (Shock active) Heating Oil fwd60d plus 2.76 percent, edge −0.11 pp on 50 percent sample. Phase 0 (Normal) Heating Oil fwd60d plus 1.92 percent, edge −0.96 pp on 28 percent sample. Phase −1 (Calm) Heating Oil fwd60d plus 4.33 percent, edge +1.45 pp on 22 percent sample. 1.56 pp spread via multi-factor shock cluster detector channel.

What this signal does not cover

Three limitations. Multi-factor composite masks which single input drove the firing. Shocks fire late in cycle, so the signal is coincident more than leading. Calm regime can persist for years without edge. Daily IC not individually significant on all sampling windows.

The signal does not capture mechanisms outside its stated transmission channel. It does not substitute for broader Heating Oil supply, demand, inventory, and crude overlays. Pair with companion signals in the Related section for complete context.

Disclaimer

This brief and the signal it describes are for informational purposes only and do not constitute investment, legal, tax, or trading advice. Hypothetical or simulated performance results have certain inherent limitations. Unlike an actual performance record, simulated results do not represent actual trading. Also, since the trades have not been executed, the results may have under- or over-compensated for the impact, if any, of certain market factors, such as lack of liquidity. Simulated trading programs in general are also subject to the fact that they are designed with the benefit of hindsight. No representation is being made that any account will or is likely to achieve profits or losses similar to those shown. The phase-conditional forward-return stats reported above are a full-sample unconditional measurement. Readers should consult a licensed financial professional before taking any trading action.

References

NYMEX Heating Oil futures daily settlement, CME Group. NYMEX HO contract trades Ultra-Low Sulfur Diesel No. 2 (ULSD, max 15 ppm sulfur) since the 2013 contract refactor.

CSI Data Corporation, Heating Oil front-month continuous (HO21120RD) series.