Clearlane: a day planner for simulated Torus-style stations on Utah's grid

It reads the CAISO day-ahead price for PacifiCorp East, fills Pulse in the midday clear lane, stays off the road in the evening jam, and keeps Spin ready for Rocky Mountain Power's calls. Then it writes an hourly envelope.

The day, published the evening before



C clear S shoulder J jam System Critical Hour (our proposal)

Lanes from the day-ahead price for PacifiCorp East: clear is the cheapest quarter of the day's range, jam the dearest. The evening price reached 2.6x[derived] the day's low. Outlined hours are System Critical Hours, under our proposed rule.

The race

Same battery, same evening sale; only the charging hours change. A battery on a fixed off-peak rule is worth $20.06[derived] per MW-day. A simulated Torus-style station on Clearlane, charging in the clear lane, is worth $58.41[derived], about 2.9x[derived] the off-peak rule. At 70[torus published] MW that is $4,088[derived] a day against $1,405[derived].

Both are value to RMP's system at day-ahead prices, not Torus revenue and not a host bill cut. The off-peak rule is our baseline, not Torus practice. Across the 179[derived]-day backtest Clearlane beats it on 91%[derived] of days.

The call

Rocky Mountain Power calls for 250[simulated] kW. Spin answers a call of about five and a half minutes, and the host meter stays under 800[simulated] kW while Spin refills. A second call inside the refill window delivers 71%[simulated] of the call, 6.5[simulated] kWh short, and the card says so.

Our call trace is simulated. Torus's own 2025 record for Rocky Mountain Power: 359[torus published] events, all unplanned calls. In the backtest, with Torus's heatmap in Mountain time, Clearlane missed 1%[simulated] of calls.

What is real

Class	What it covers
REAL	CAISO day-ahead prices and forecasts, EIA hourly CO2
DERIVED	Lanes, net load, the race, the backtest, the envelope
SIMULATED	Stations, host load, call times
TORUS_PUBLISHED	Spin and Pulse specs, the 2025 event counts, the MOU
ASSUMPTION	Round-trip efficiency, the cycle budget applied to Pulse, export limit
MEASURED	Solve and re-plan time, timed live on stage

The envelope

One row per hour in `clearlane.envelope/v1`: System Critical Hours, reserve kW held for calls, charge and discharge limits after host ceilings, and the planned power. Hours with planned Pulse power on the day:

Hour	System Critical	Reserve kW	Max charge kW	Max discharge kW	Planned kW
12am	no	250	250	250	27
9am	no	250	180	250	160
10am	no	250	150	250	107
11am	no	250	120	250	107
12pm	no	250	80	250	53
4pm	no	250	80	250	53
6pm	yes	250	250	250	-235
7pm	yes	250	250	250	-211

The envelope is a format Clearlane proposes: a working example, not a filing. The System Critical Hours rule is our proposal; Torus asked ROWE, the Western resource adequacy program, to define those hours transparently. The full day is in the envelope packet and the sample file.

What's next

- Pilot the envelope at a few Wattsmart sites this winter.
- Score it against Rocky Mountain Power's real calls, not simulated ones.
- Keep Lasso making every dispatch decision; the envelope is one more grid signal.
- Whether Lasso's API accepts an outside schedule or envelope is an open question, so we do not say it does.

Stations here are simulated Torus-style. Torus has not reviewed or endorsed this page.