Clearlane

A day planner for simulated Torus-style stations on Utah's grid.

It reads tomorrow's power prices, fills Pulse, the battery, when power is cheap at midday, sells in the evening rush, and keeps Spin, the flywheel, ready for calls from Rocky Mountain Power (RMP), the local utility.

Operating day

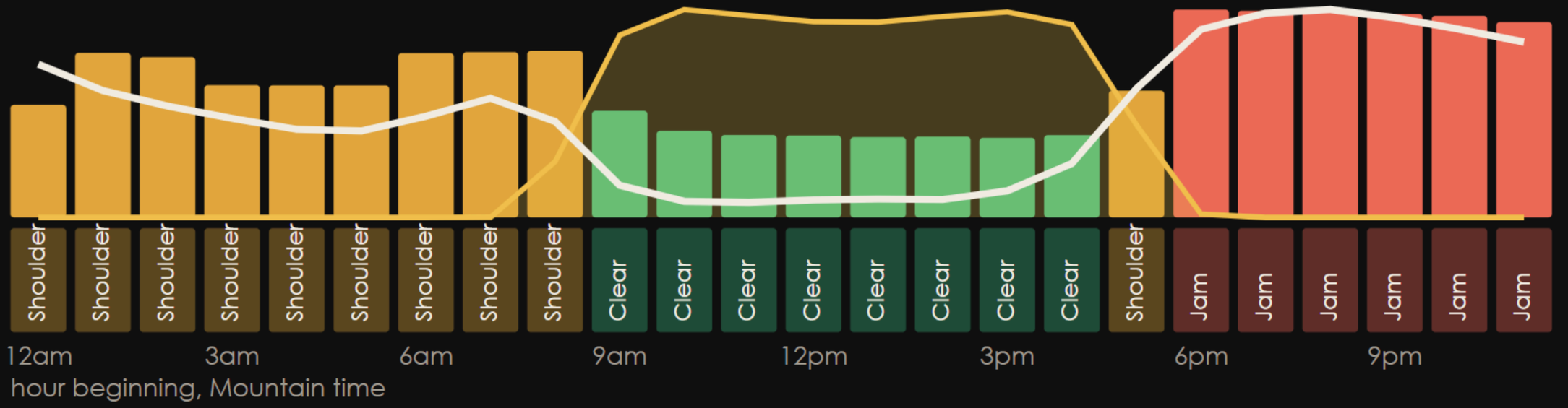
Tue, Oct 27, 2026

Presented by Craig Cossairt

Start

Power is cheapest at midday. The road jams in the evening.

Like a traffic report published the evening before. Each bar is one hour's price: green is the clear lane, amber is in between, red is the evening jam.



Bars: day-ahead price, colored and labeled by lane Gold area: solar forecast, scaled to its own peak Ink line: net load, scaled to its own peak

Price jumps 2.6x ✓ derived from the midday low to the 6pm ✓ derived peak.

Filling up at midday is worth 2.9x ✓ derived the off-peak rule.

Same battery, selling in the same evening hours. The only difference is when it fills up. The off-peak rule is our baseline, not Torus practice.

Replay the day

Battery on the off-peak rule

$20.06 ✓ derived

per MW of battery per day, value to Rocky Mountain Power's grid

Buys	2.132 MWh ✓ assumption	at $39.53 ✓ derived	= $84 ✓ derived
Sells	1.876 MWh ✓ assumption	at $55.62 ✓ derived	= $104 ✓ derived
Net			$20 ✓ derived

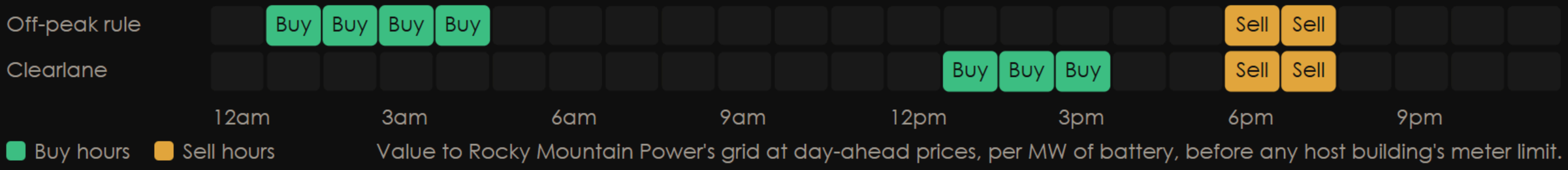
Simulated Torus-style station on Clearlane

✓ Clearlane

$58.41 ✓ derived

per MW of battery per day, value to Rocky Mountain Power's grid

Buys	2.132 MWh ✓ assumption	at $21.55 ✓ derived	= $46 ✓ derived
Sells	1.876 MWh ✓ assumption	at $55.62 ✓ derived	= $104 ✓ derived
Net			$58 ✓ derived



Value to Rocky Mountain Power's grid at day-ahead prices, per MW of battery, before any host building's meter limit.

When Rocky Mountain Power calls, Spin answers.

A simulated call of about five and a half minutes. The battery-only plan chases price alone and keeps nothing back for Rocky Mountain Power, so it has almost nothing left when the call comes.

Rocky Mountain Power calls now | Call again during refill

Simulated Rocky Mountain Power call: 250 ✓ simulated kW now. Simulated clock 6:59pm MT

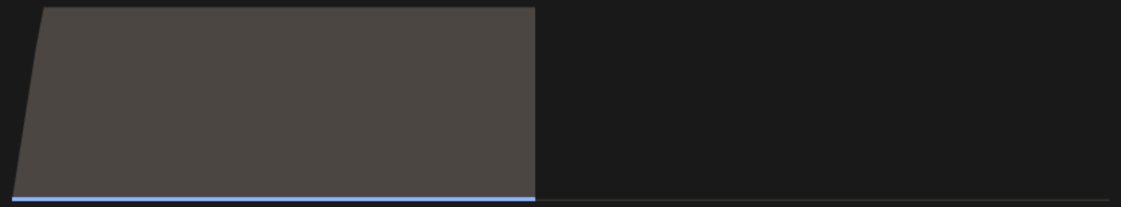
Simulated Torus-style station on Clearlane

71% ✓ simulated of the second call delivered



Battery-only plan

6% ✓ simulated of the call delivered



Gray: what Rocky Mountain Power asked for. Blue: Spin, the flywheel. Gold: Pulse, the battery, including power it was already selling.

Our simulation

Spin full again at 7:00pm MT. Host meter peak during the refill 555 kW ✓ simulated.

Second call inside the refill window: the call wins and Pulse diverts to cover it. Shortfall 6.5 kWh ✓ simulated.

Torus's published record, separate from this simulation

359 ✓ torus published events in 2025. Ramped in 19 ✓ torus published seconds against a 30 ✓ torus published second target, delivered 102% ✓ torus published.

After the call, the rest of the day is re-solved.

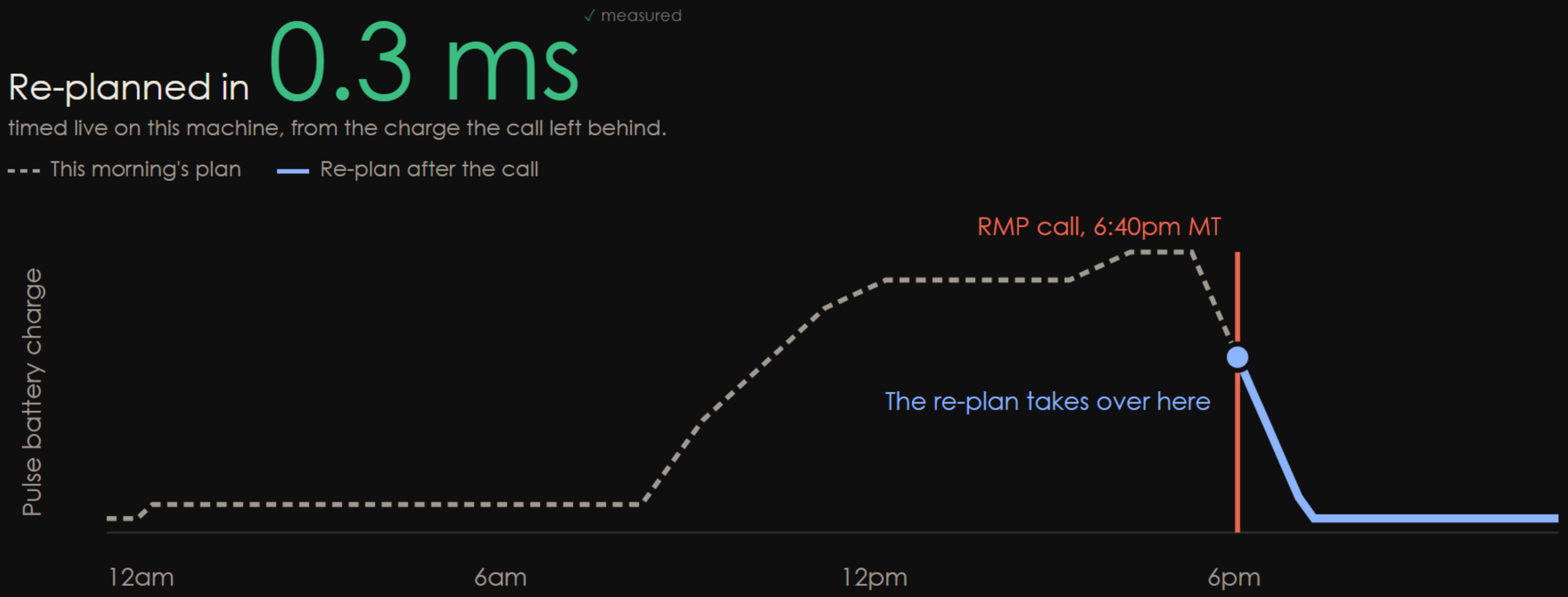
Blue is the plan re-solved from the charge the call left behind. It sits almost on top of this morning's plan: answering the call barely changes the evening.

Resume the day

Re-planned in 0.3 ms

✓ measured

timed live on this machine, from the charge the call left behind.



Battery-only is worth more on paper. Clearlane is the plan a host and RMP would allow.

Backtested on 179 ✓ derived days, May 1 to Oct 27. Clearlane beats the off-peak rule on 91% ✓ derived of days.

Show the envelope

	Battery on the off-peak rule	Battery-only plan	Simulated Torus-style station on Clearlane
Typical day per MW, on paper	$7.75 ✓ derived Most days between -$14.26 ✓ derived and $57.18 ✓ derived	$44.91 ✓ derived Most days between $20.97 ✓ derived and $133.42 ✓ derived	$38.69 ✓ derived Most days between $1.28 ✓ derived and $116.00 ✓ derived
Battery wear: cycles a year, budget 300 ✓ derived	365 ✓ derived — ✕ Fail	625 ✓ derived — ✕ Fail	300 ✓ derived — ✓ Pass
Times it broke the host's meter ceiling	0 ✓ derived — ✓ Pass	2,040 ✓ derived — ✕ Fail	0 ✓ derived — ✓ Pass
RMP calls it could not answer Pass: fewer than the off-peak rule	23% ✓ simulated — – Baseline	40% ✓ simulated — ✕ Fail	1% ✓ simulated — ✓ Pass

Cached, from Tue, Oct 27, 2026. Snapshot, fetched 11:07am MT Engine envelope and backtest.

Sources | Back | Next

Scale the station to the fleet the MOU allows.

One station's value per MW on the reference day, multiplied by the fleet in Torus's agreement (MOU) with Rocky Mountain Power.

70 ✓ torus published MW

500 ✓ torus published MW

Fleet size 500 MW

Battery on the off-peak rule

$10,032 ✓ derived

per day, value to RMP's system at day-ahead prices.

$20.06 ✓ derived per MW-day × 500 MW

Simulated Torus-style station on Clearlane

$29,203 ✓ derived

per day, value to RMP's system at day-ahead prices.

$58.41 ✓ derived per MW-day × 500 MW

This assumes every enrolled MW is a two-hour battery like our reference station, and that the fleet does not move prices. The MOU is a ceiling, not installed capacity. A typical backtest day is worth less.

The ask: pilot the envelope.

Pilot the day-ahead envelope, a format Clearlane proposes, at a few sites in Rocky Mountain Power's Wattsmart program this winter. Each hour it tells Rocky Mountain Power the reserve held for its calls and the most the station will charge or discharge.

Code and data: github.com/craigcossairt/clearlane

2.9x ✓ derived
what filling up at midday is worth, against the off-peak rule

1% ✓ simulated
of Rocky Mountain Power's calls missed in the backtest

91% ✓ derived
of backtest days beat the off-peak rule

In Utah, compute should follow the sun in time, not in space.

Clearlane: fill up when the road is clear, and keep Spin ready for Rocky Mountain Power's calls.

Simulated AI campus, moved in time
✓ simulated

A simulated campus moves 75 ✓ simulated MWh of compute load into the clear midday hours. Value to RMP's system at day-ahead prices: $2,551 ✓ simulated a day.

Simulated. This is not a Torus data-center product.

HOW IT WORKS

From tomorrow's public prices to an hourly plan

Public data

CAISO day-ahead prices and forecasts for PacifiCorp East, and EIA hourly grid data. Python fetches them, checks them and saves a snapshot.

real

Plan the day

A TypeScript optimizer fills Pulse in the midday clear lane, sells into the evening jam and keeps Spin ready, inside the host building's meter limit and a wear budget.

derived

Re-plan on a call

When Rocky Mountain Power calls, Spin answers at once and the planner re-plans the rest of the day around it.

derived

Publish

The envelope: one row per hour for the next day, with System Critical Hours. Every number the presentation shows comes from one numbers file.

derived

The stations, the host building's power use and the calls are simulated Torus-style, built from Torus's published specs. The backtest runs the same planner on real prices from May 1 to Oct 27.

CHECK IT YOURSELF

Every number re-derives offline with one command

```
> git clone https://github.com/craigcossairt/clearlane
> cd clearlane
> npm ci
> npm run reproduce
```

- Checks every input file against its recorded fingerprint, re-runs the planner and compares every published number.
- No keys and no network: the data snapshot is in the repo.
- Every number on screen carries its label: real, derived, simulated, torus published, assumption or measured.
- Tests pin every number that reaches the stage, and CI runs the same checks on every change.

WHAT'S NEXT

Built, next, then

Built

- Day-ahead planner and the re-plan after a call
- Hourly envelope with System Critical Hours
- Backtest on six months of real prices
- Open code and data that run offline

Next: this winter

- Pilot the envelope at a few sites in Rocky Mountain Power's Wattsmart program
- Publish it each evening and compare the plan with what each station did
- First learn from Torus how Spin refills, how call delivery is measured and whether sites export

Then

- Forecast the host building's load and the calls: where machine learning fits
- Connect to the station's and Rocky Mountain Power's own systems once their interfaces are known
- More stations on the same envelope

Built solo by Craig Cossairt, with six AI agent lanes: integration, engine, data, UI, pitch and science.

Clearlane

Code, data and how every number is made

github.com/craigcossairt/clearlane

Presentation, video and documents

clearlane-mauve.vercel.app

Presented by Craig Cossairt · Hard Tech Hackathon, Salt Lake City · Torus bounty