

Risk-reward trade-offs

Insights from the Gridmatic 2023 ERCOT Storage Report

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This presentation contains preliminary findings from our analysis of storage systems in ERCOT in 2023, based on available ERCOT disclosure data. The insights presented are subject to change as our research progresses. A comprehensive report with deeper and more extensive findings will be published upon completion of our analysis. Readers are advised that the information provided herein should not be used as the sole basis for making decisions without additional sources of information.

About Gridmatic

AI-Enabled Power Marketer

Mission

To enable and accelerate the ascent of clean energy in the world's electricity markets

DNA

AI



Energy



Markets



We use AI to optimize outcomes for energy stakeholders

Suppliers

We buy energy from wind and solar farms

Buyers

We supply standard and advanced energy products

Storage

We operate batteries and optimize revenue

Our AI engine made us the #1 trader in ERCOT in 2023

Cumulative Profit in DAM Trading



Annual Gridmatic Storage Report

Purpose

Share storage insights more broadly

Scope

ERCOT commercial batteries

Data Sources

60 day ERCOT disclosure data



2021 (n = 19)

2022 (n = 47)

2023 (n = 72)



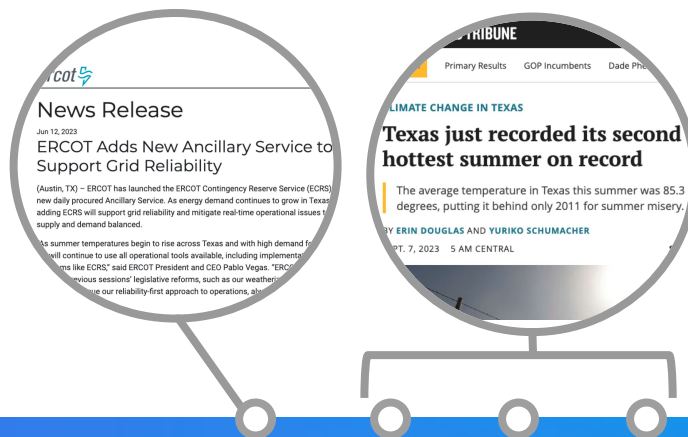
2023 was quite the year!

The year started with a pessimistic outlook
due to expected AS saturation and stricter operational constraints



Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan

But the introduction of ECRS changed the outlook along with a very hot summer



Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan

SOC policy was hotly contested ending with a retraction in Jan 2024



ERCOT AND QSE OPERATIONS
PRACTICES DURING THE OPERATING HOUR

December 21, 2022
Version 5.16



Revised ERCOT state-of-charge rules 'an improvement' but still impact availability

By Cameron Murray
September 1, 2023

Grid Scale

BUSINESS

State utility regulators shoot down ERCOT's attempt to add new rules for battery operators in Texas

The Public Utility Commission voted unanimously against long-contested regulations

By Sara DiNatale, Staff writer
Updated Jan 18, 2024 4:21 p.m.



Dec

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

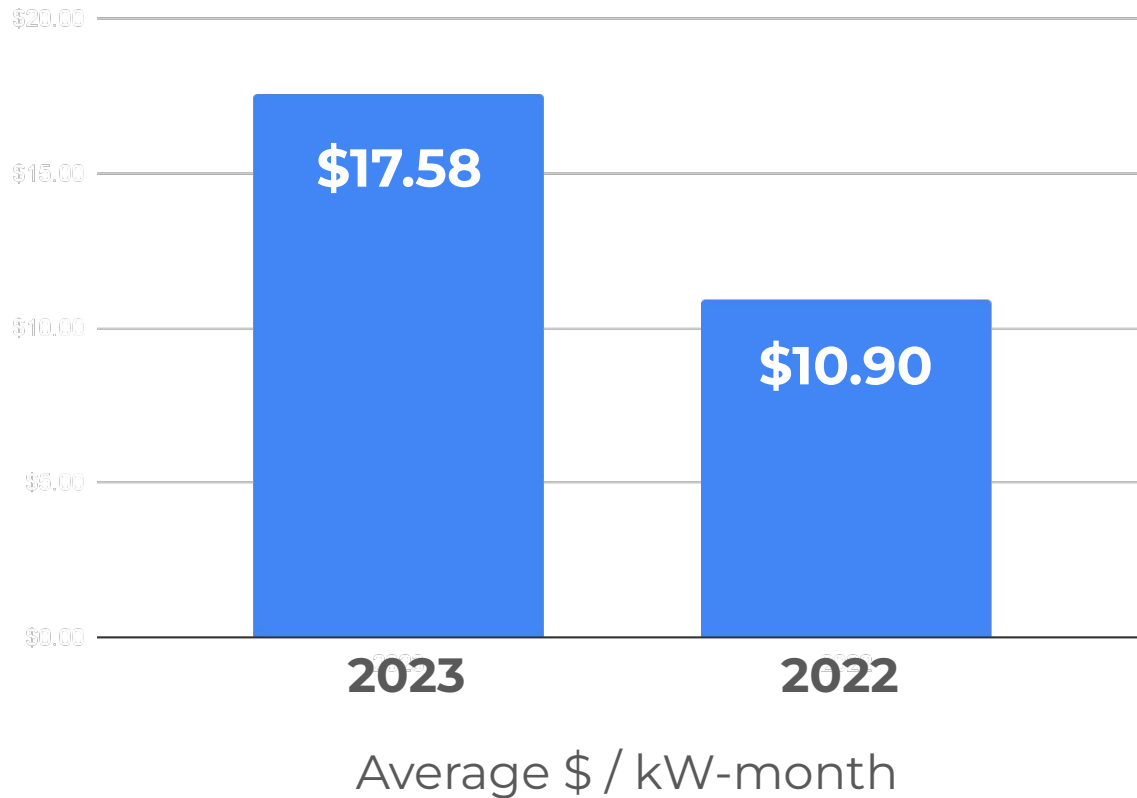
Nov

Dec

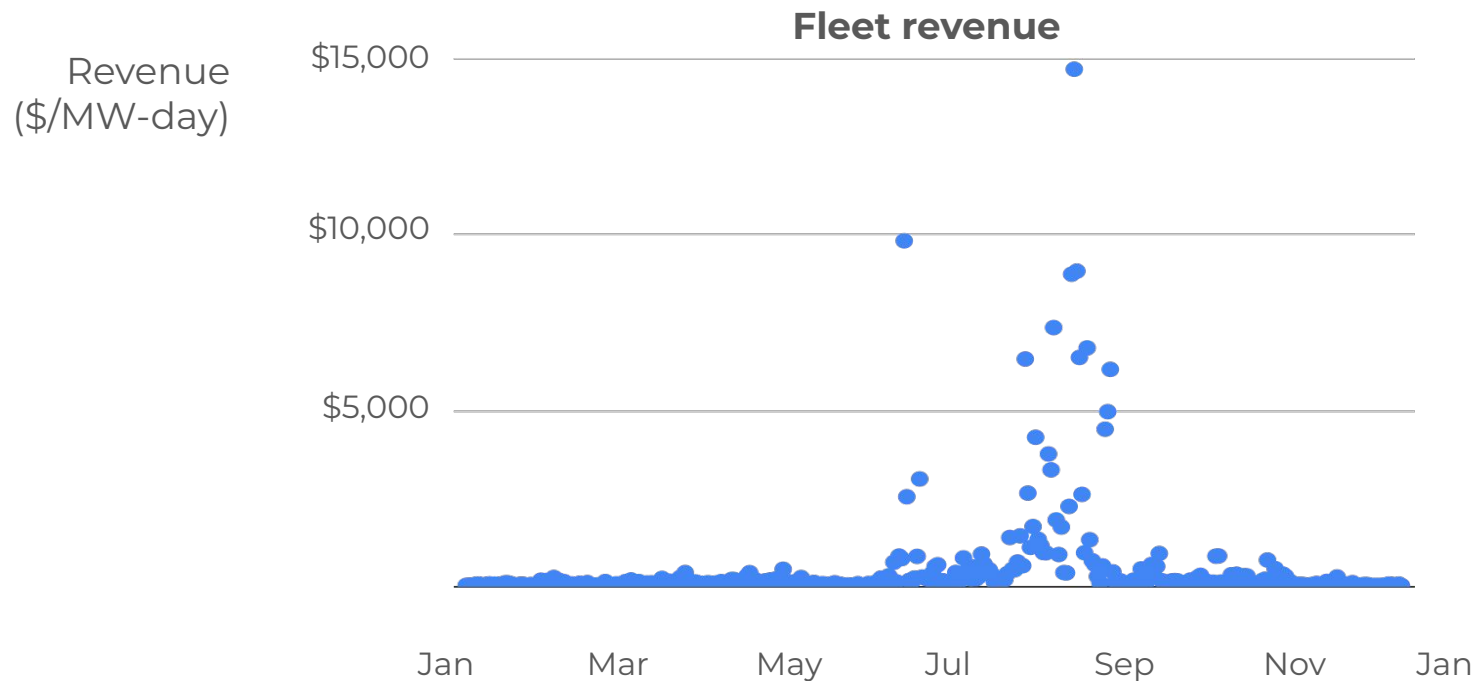
Jan

So what did this mean for 2023 ERCOT results?

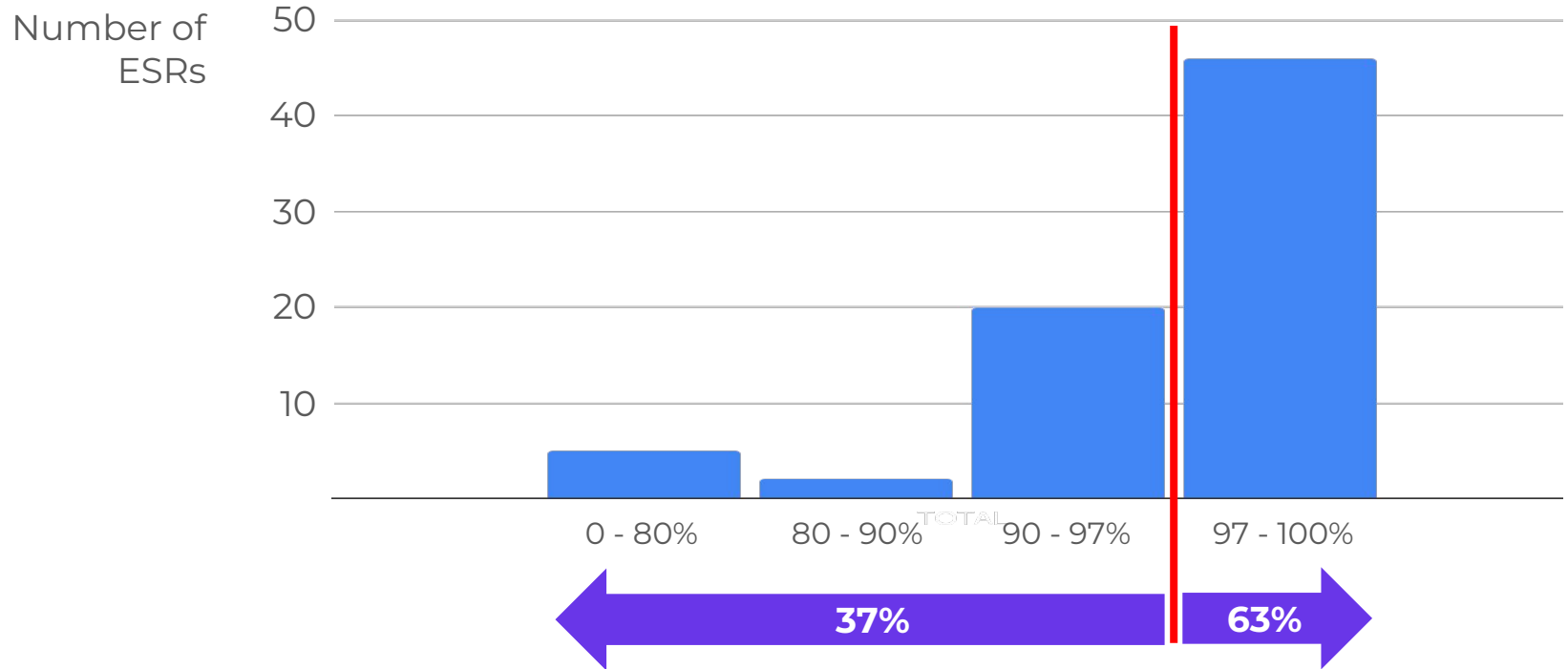
**Average
revenue
grew 61%
YoY**



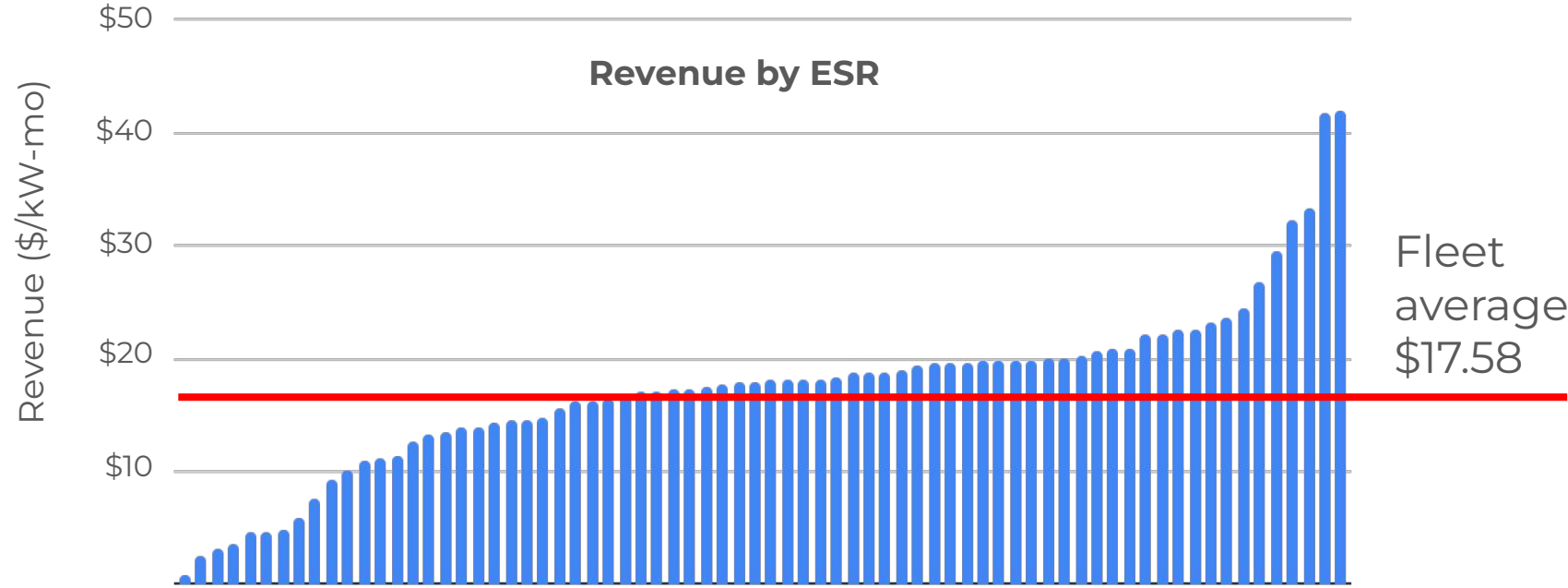
As expected, revenue peaked during the Summer months



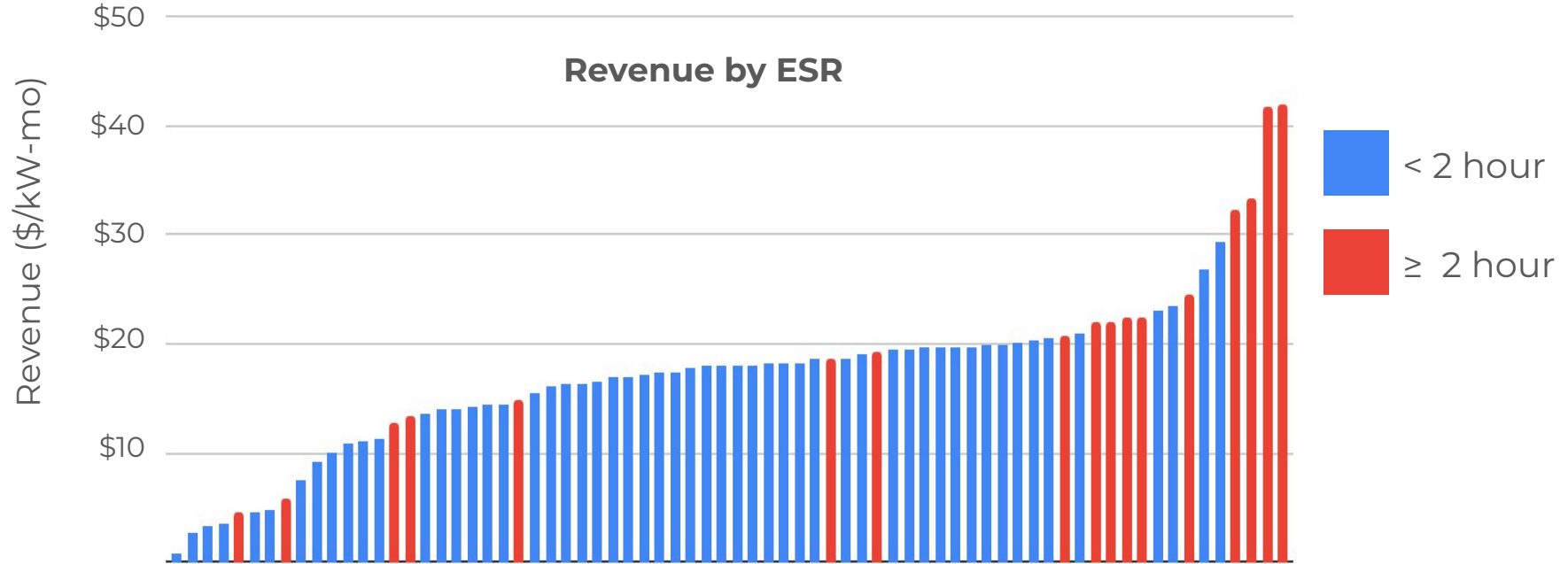
Availability continued to be strong



Not all ESRs performed well

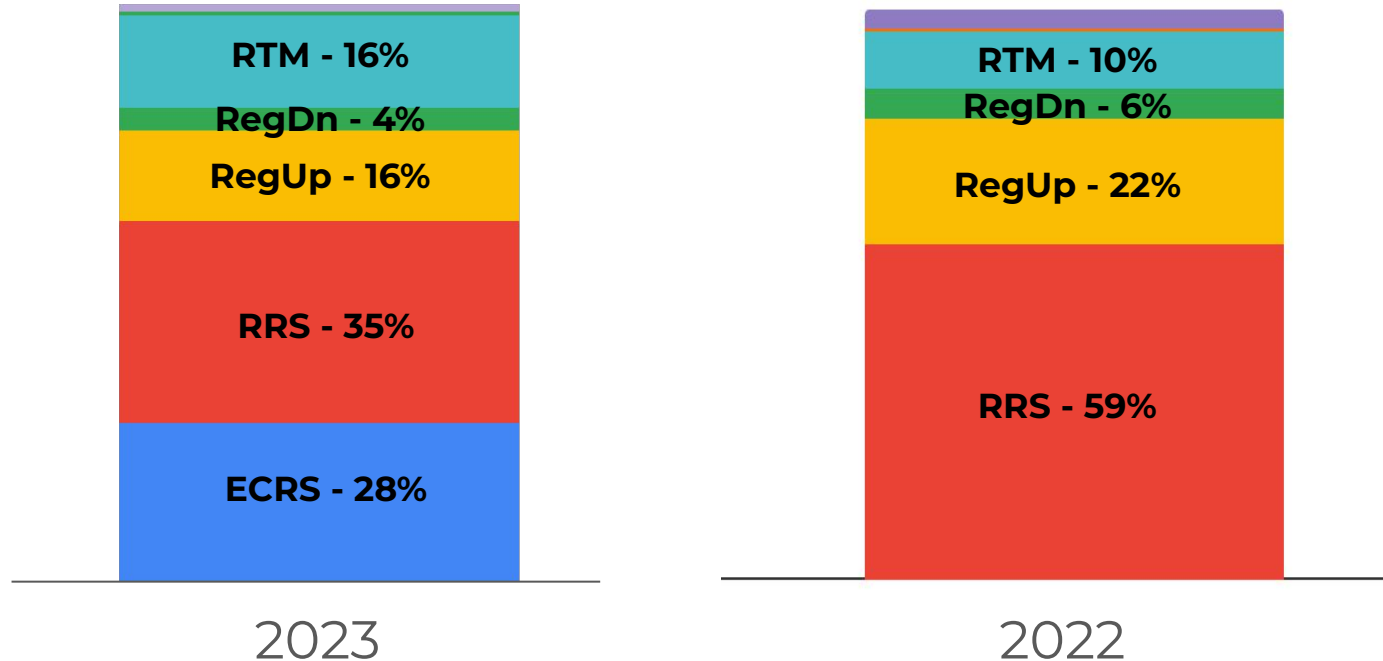


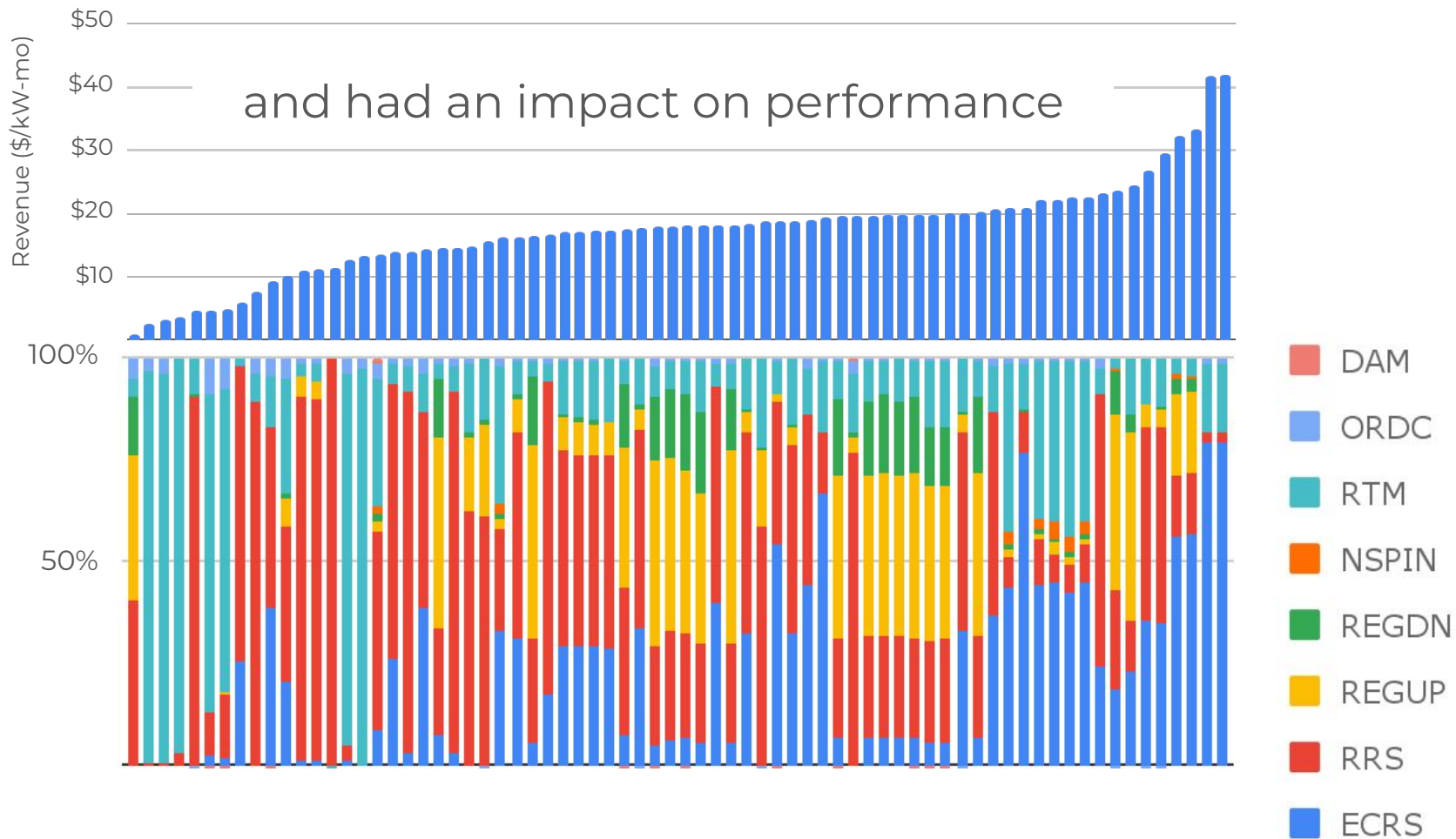
Duration affected performance



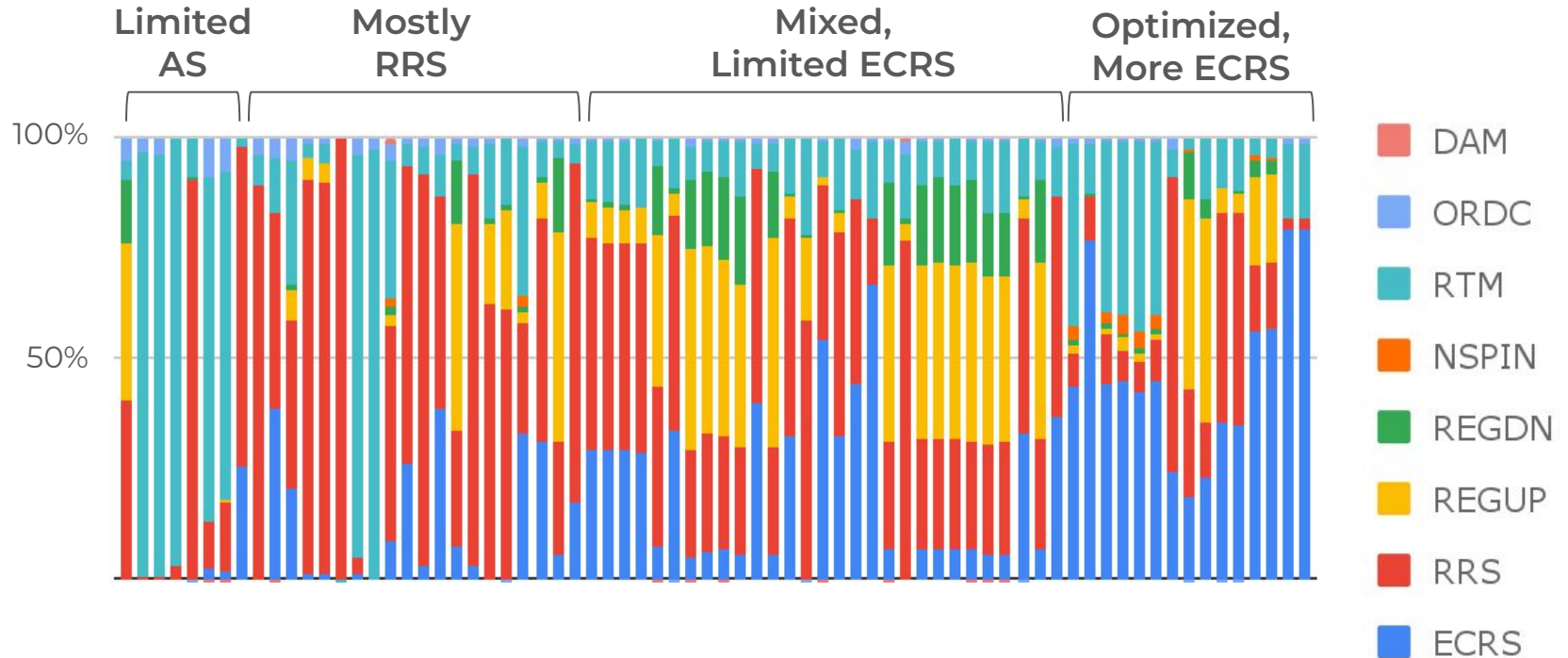
Product revenue mix evolved

Revenue mix at fleet level





as reflected by operational strategies



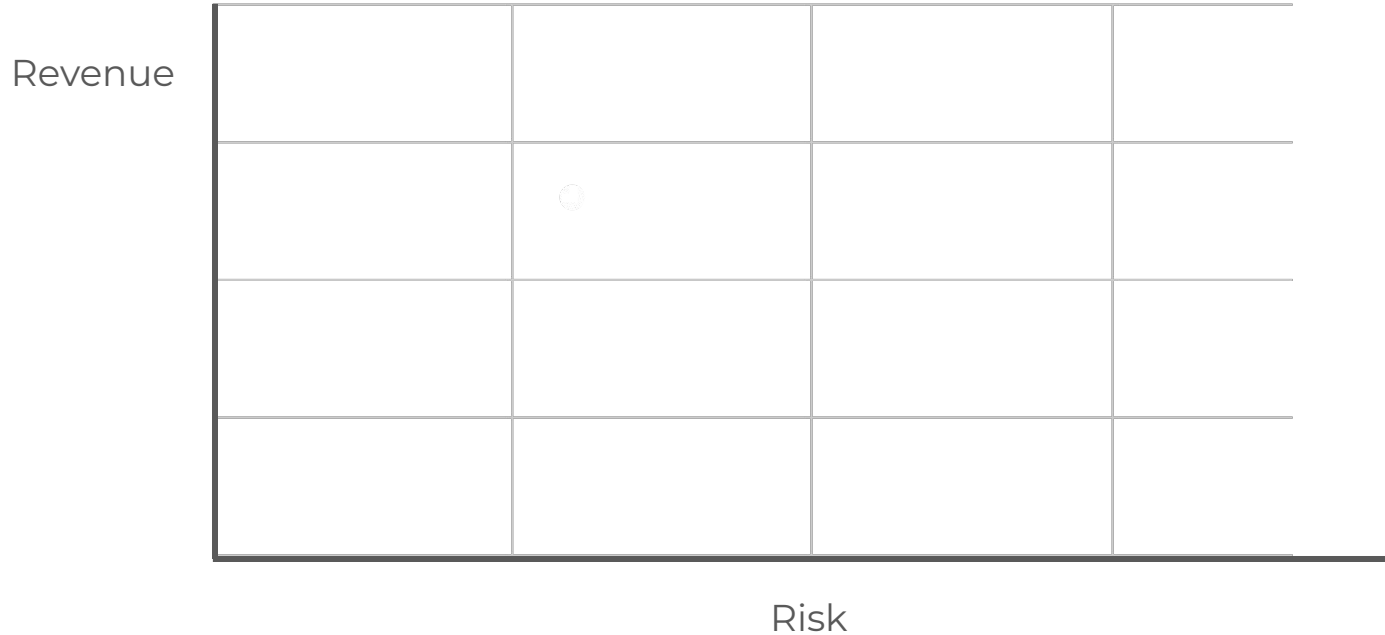


Risk-reward trade-offs

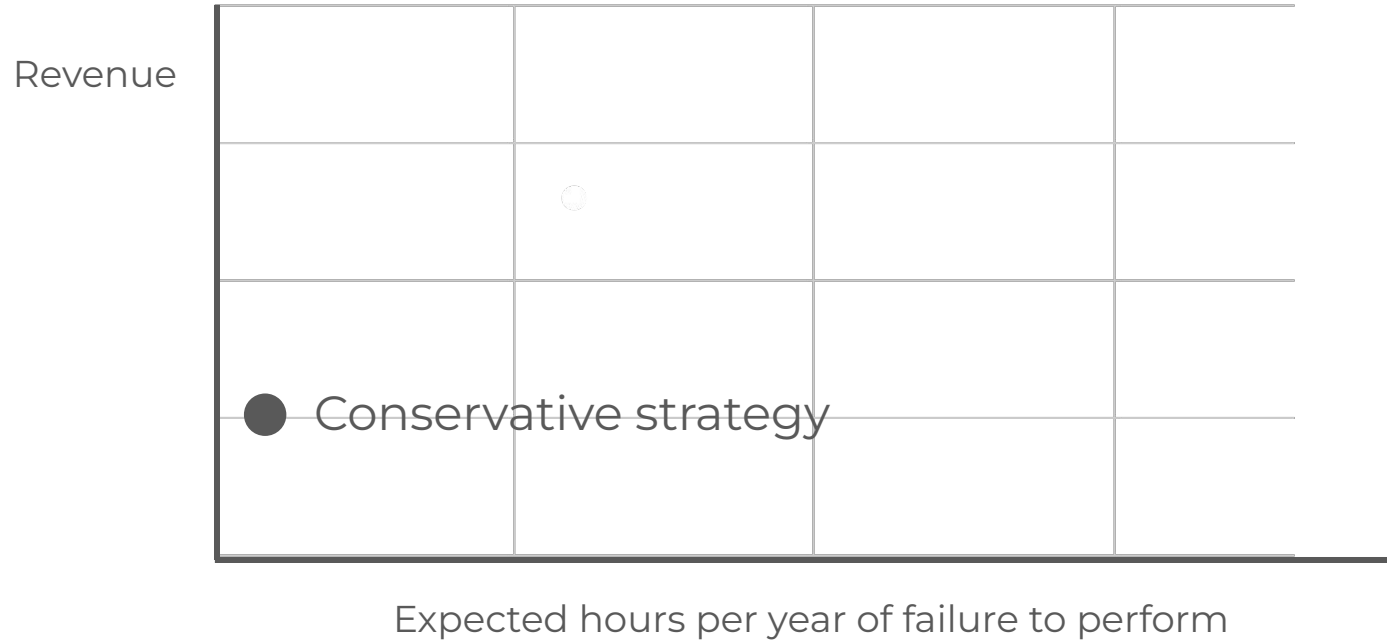
Gridmatic predictions for 2024

- ERCOT will focus on **failure-to-perform** instances
- Financial **penalties** will increase
- ERCOT may impose additional penalties on **poor performers**
- Near term: **Ancillary Services** will still be valuable

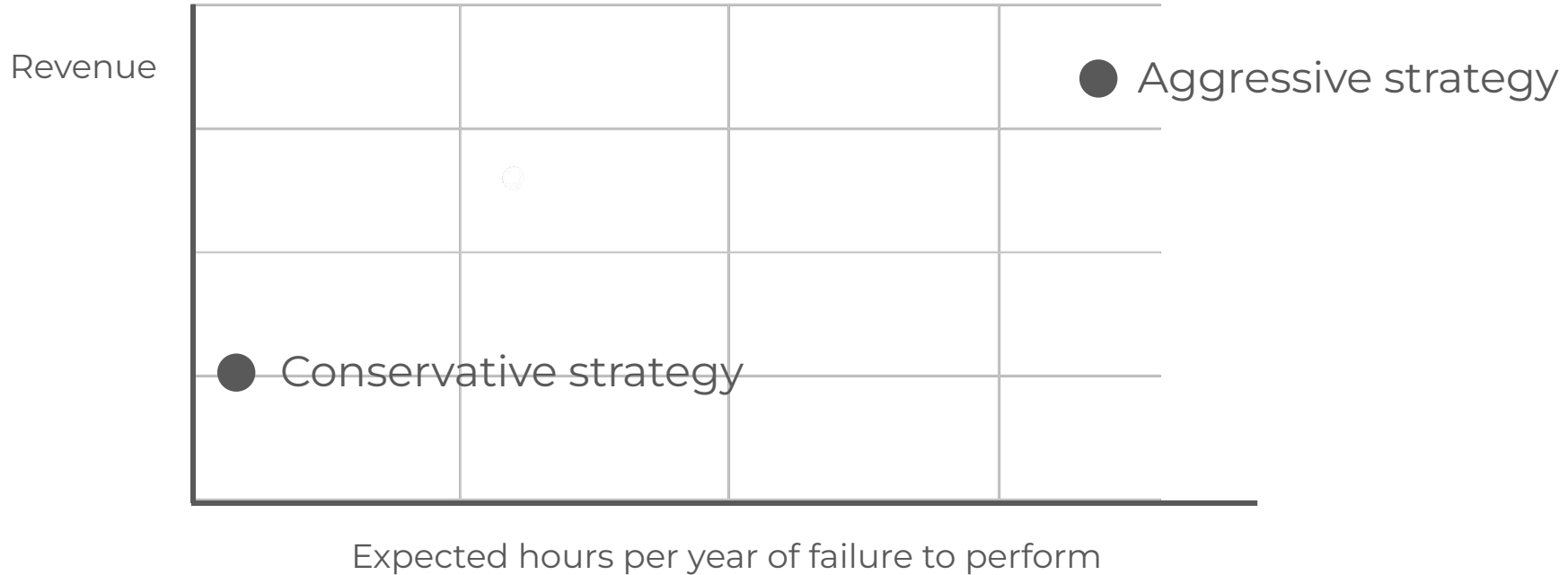
Financial performance is dependent on operational strategy which determines risk and returns



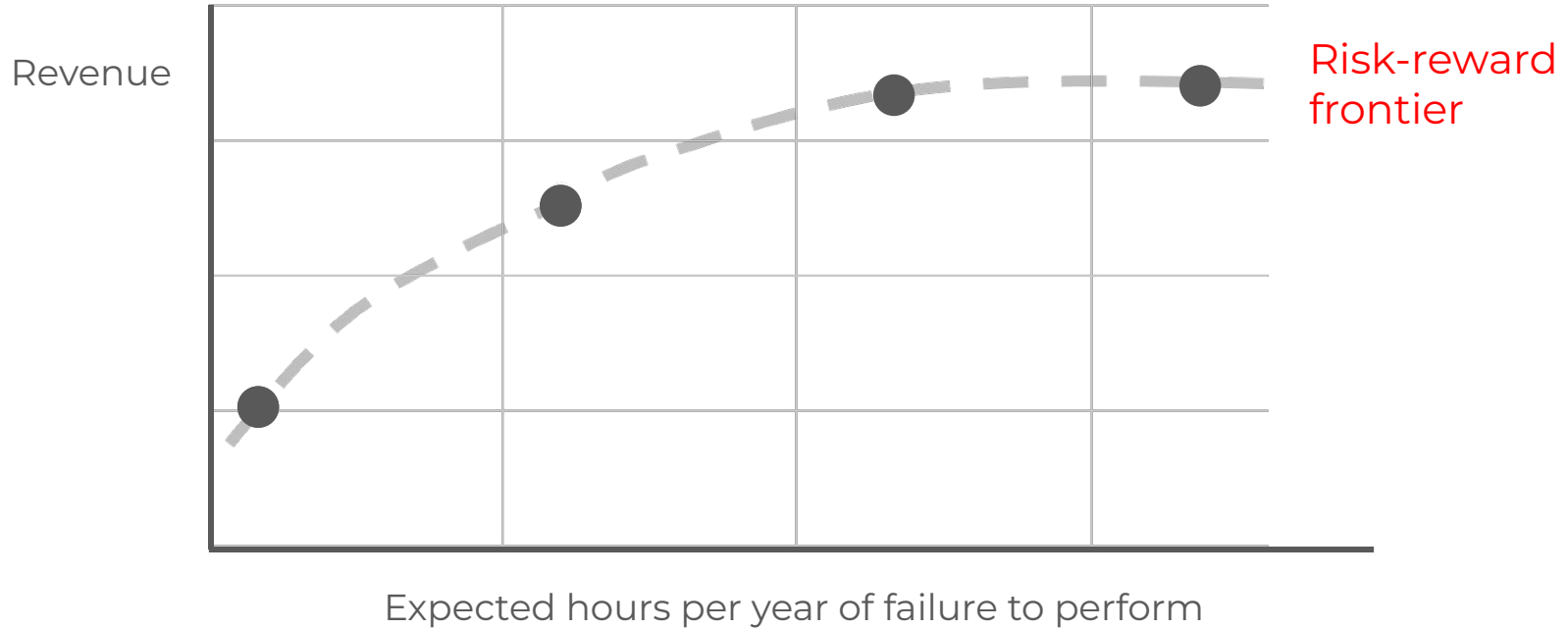
Conservative operation minimizes failure to perform



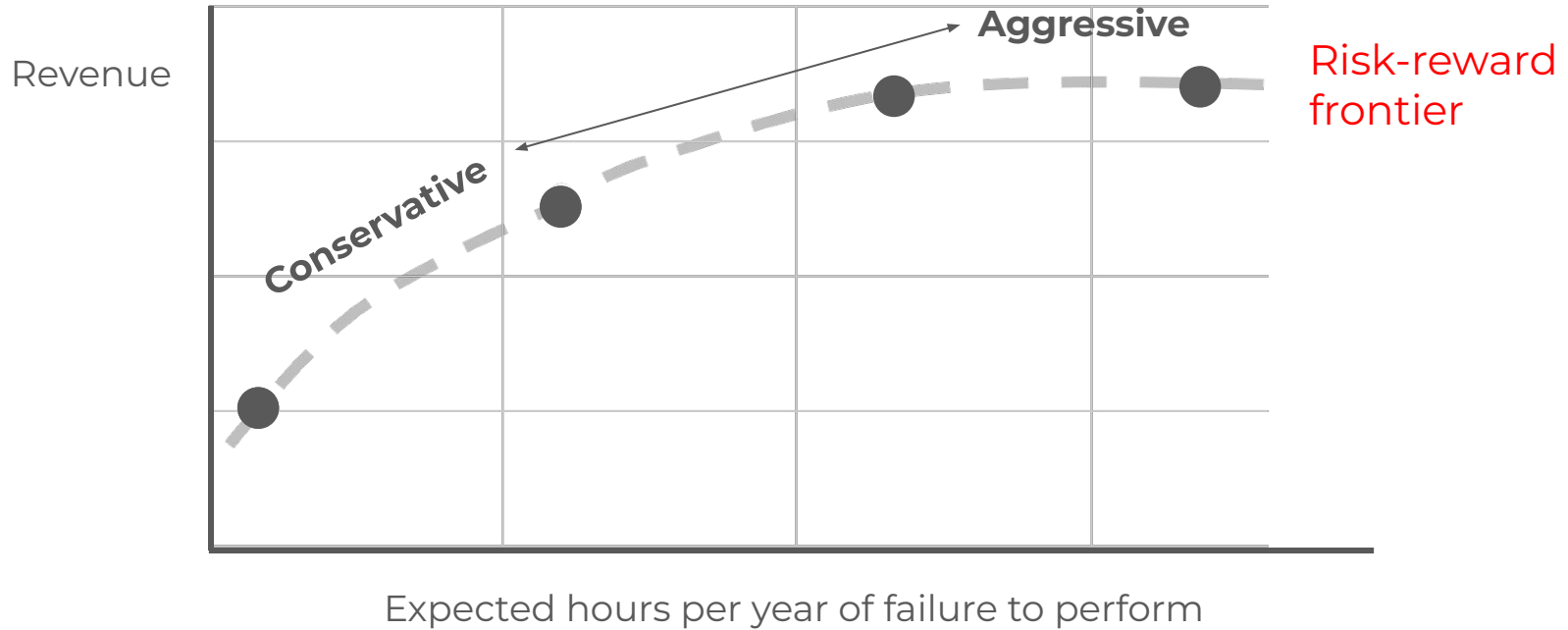
Aggressive operation involves taking risks in pursuit of rewards



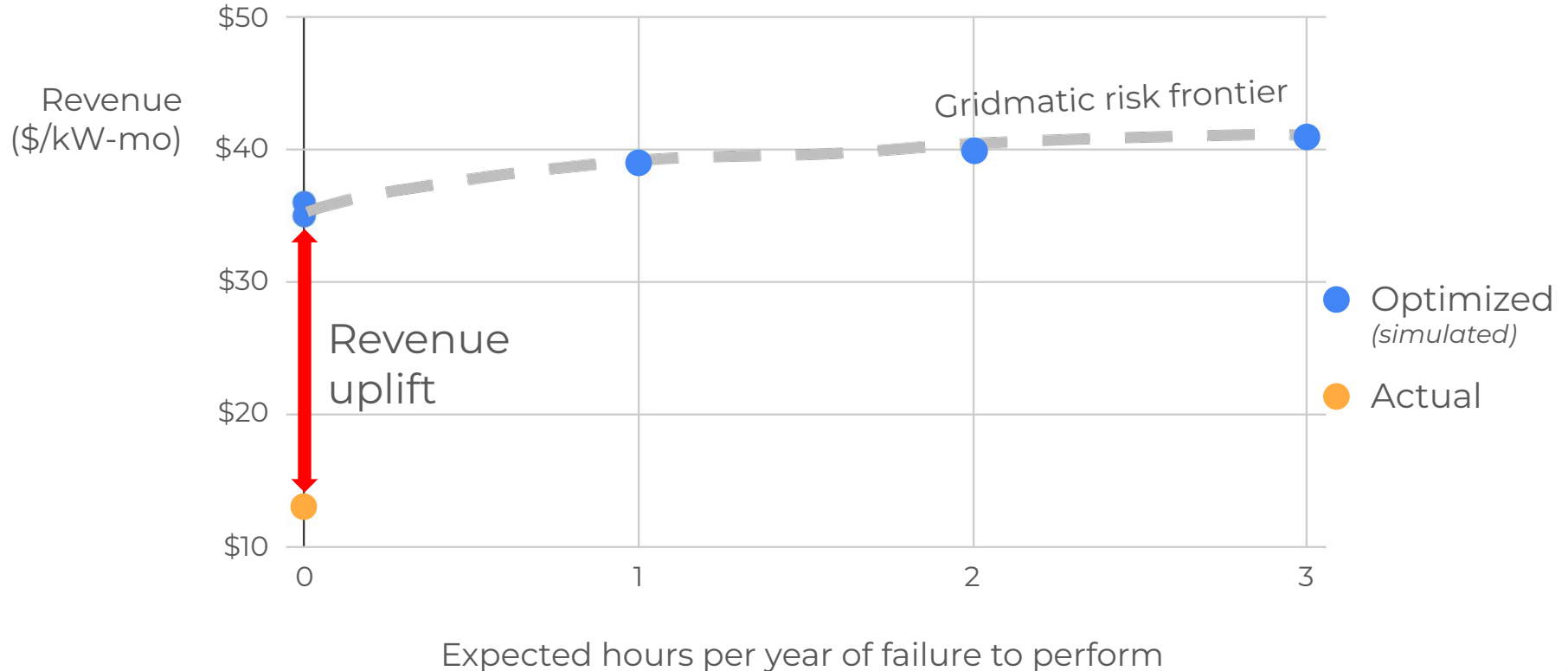
Optimal returns fit to a line that represents a risk-reward frontier



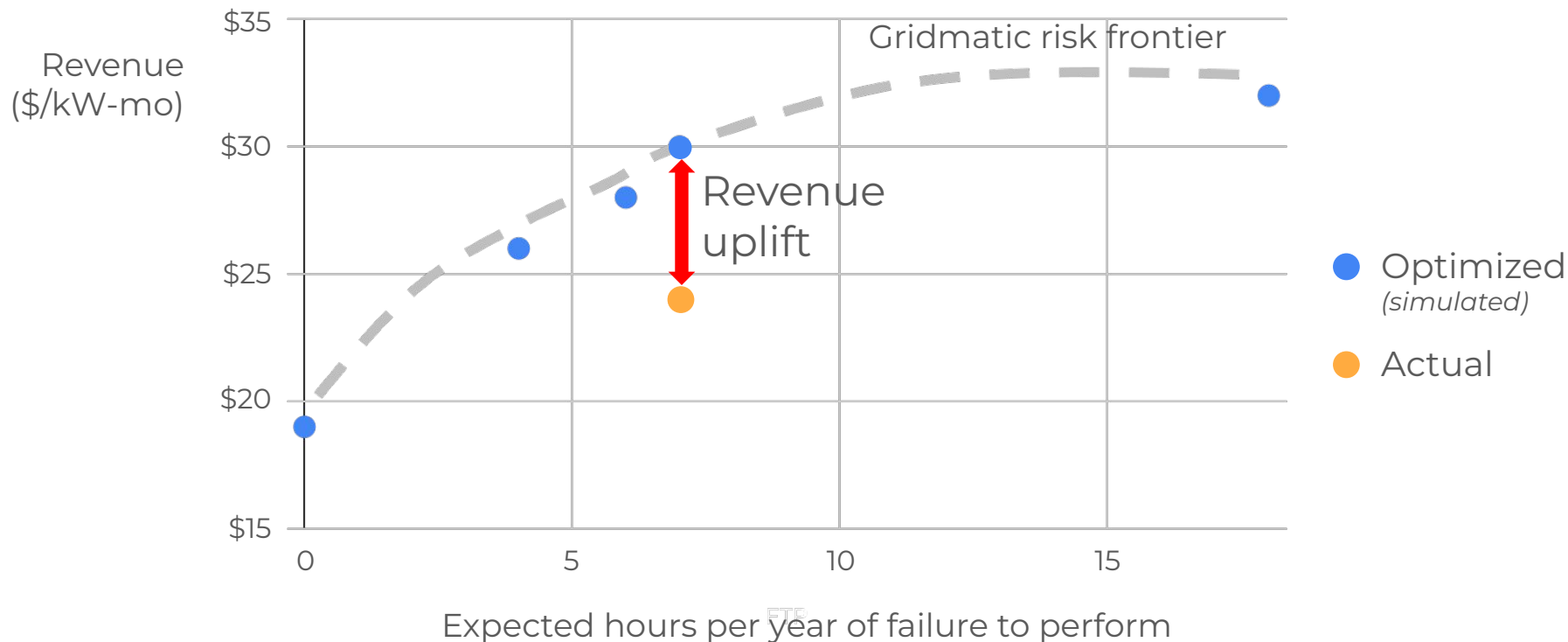
Optimal returns fit to a line that represents a risk-reward frontier



In 2023, some batteries were operated too conservatively, thereby missing out on potential revenue



Others took an aggressive strategy but still weren't on the risk-reward frontier





Gridmatic's Approach

Expecting a greater focus on penalties for failure to perform,
Gridmatic's approach:

1

Assess

Make a
quantitative risk
assessment per
project

2

Evaluate

Evaluate
flexibility within
a resource
portfolio

3

Optimize

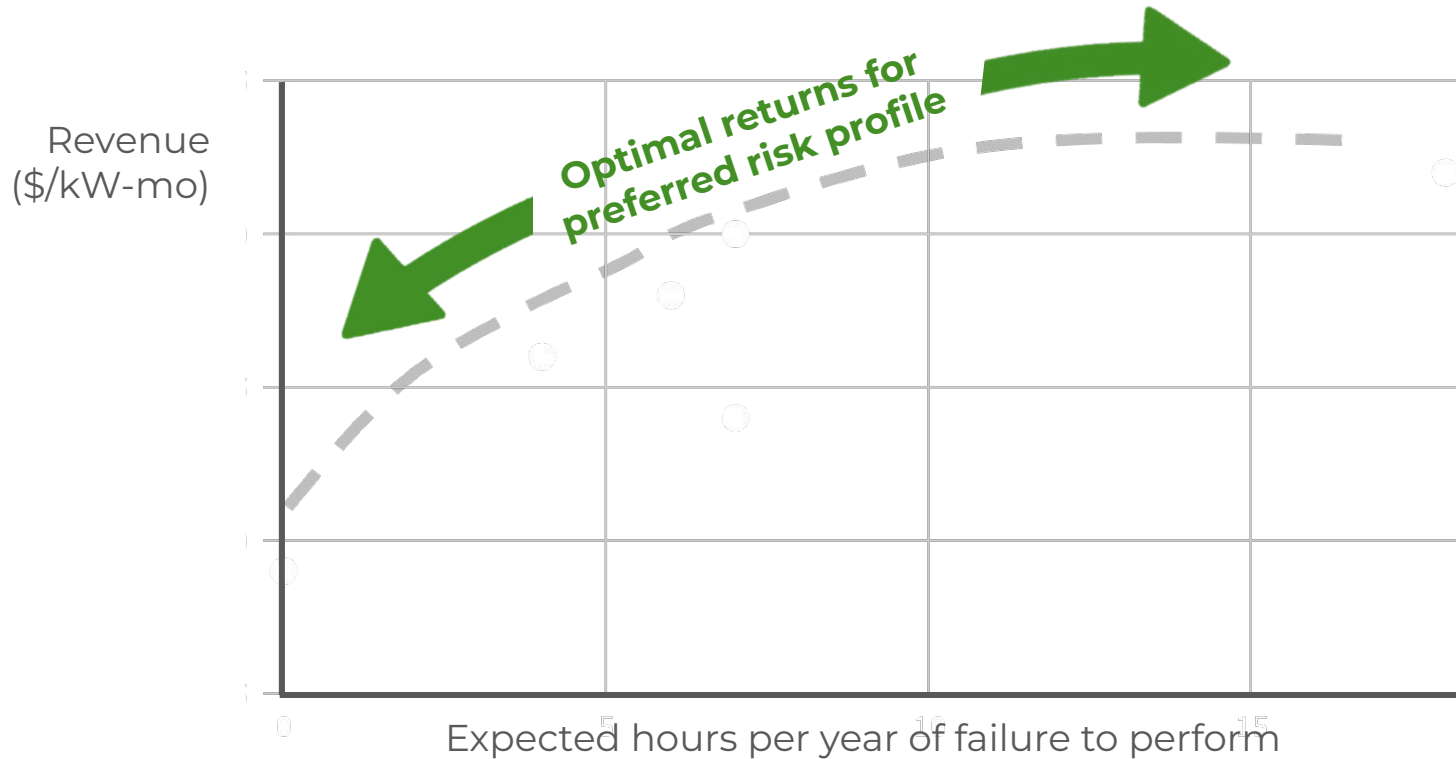
Optimize revenue
using market-
proven AI

4

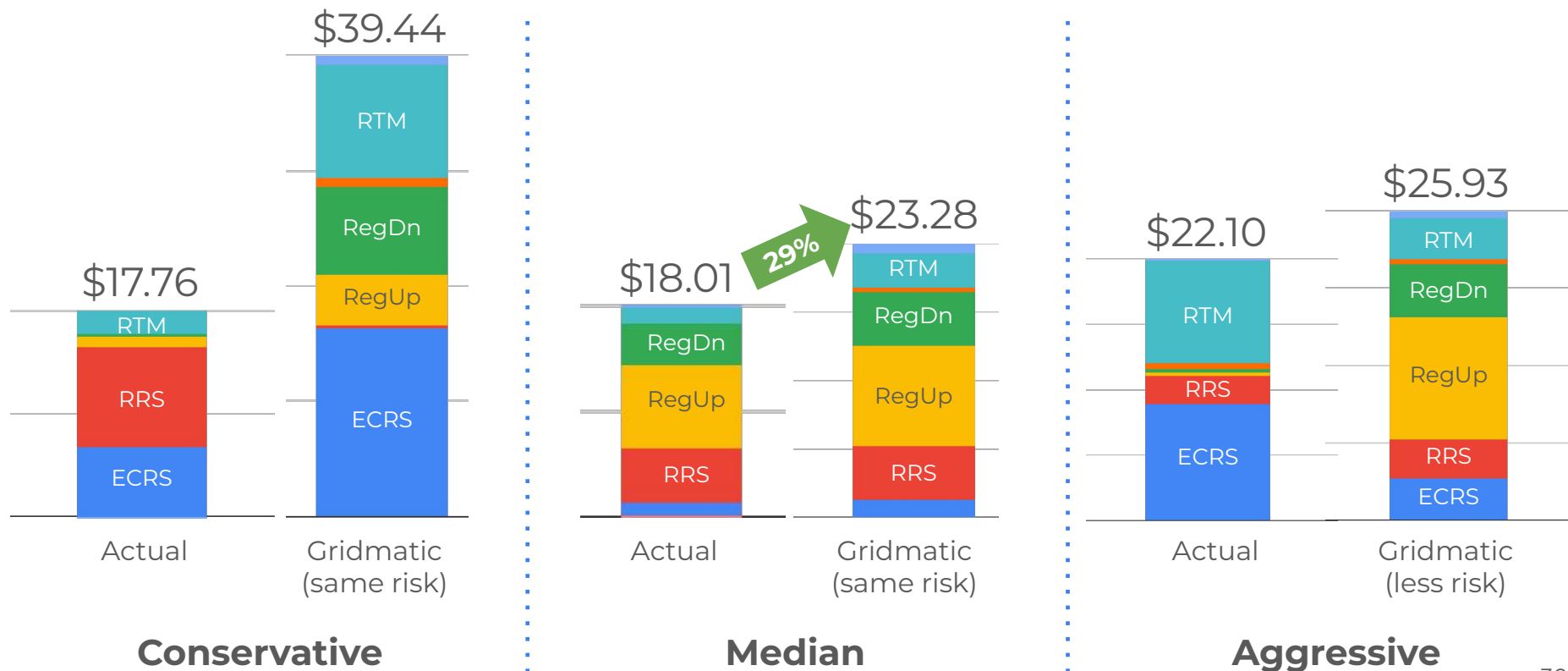
Iterate

Update quickly
based on market
changes (e.g., ECRS)

We customize an operational plan
based on Risk-Return preferences



Operating within these constraints, and assuming a single asset portfolio, here are returns for sample systems in 2023



Gridmatic storage offerings

Tolling

Fixed monthly revenue to owner; Gridmatic retains dispatch responsibility and market risk

Revenue floor + upside sharing

Guaranteed revenue floor and revenue share

Scheduling-as-a-Service

Gridmatic optimizes project revenue for owners seeking market upside

To receive the full report:



For more info:

info@gridmatic.com

