

The background of the slide features a series of wavy, overlapping lines in shades of blue and teal, creating a sense of motion and digital connectivity. The lines are most dense in the center and become sparser towards the edges.

FLUENCE

A Siemens and AES Company

ESR Bidding and Market Design

ESIG 2025 Forecasting & Markets Workshop


GARY CATE, PRINCIPAL DIRECTOR, ENERGY MARKETS
FLUENCE DIGITAL

OUR MISSION

Transform the way we power our world to create a more sustainable future.

PURPOSE-BUILT  PURPOSE-DRIVEN 

ENERGY STORAGE SOLUTIONS ⁽¹⁾

 **37.7 GWh**
CONTRACTED AND DEPLOYED

 **260+**
PROJECTS

SERVICES ⁽²⁾

 **8.7 GW**
TOTAL

OPTIMIZATION SOFTWARE ⁽²⁾

MOSAIC

17.8+ GW
OF AI-OPTIMIZED BIDDING OF
RENEWABLES AND STORAGE



NISPERA

14.1+ GW
GW OF RENEWABLE AND
STORAGE ASSETS UNDER
MANAGEMENT

(1) Deployed or contracted as of December 31, 2024

(2) Contracted or assets under management as of December 31, 2024

Dynamic electricity markets, technology, and requirements create complexity



**Commercial
Dynamics**



**Advancing
Technology**



**Regulatory
Changes**



Maximizing BESS revenue faces challenges

Storage is **more complex** to bid than other asset classes

- Bidirectional
- Unique Constraints

Quickly changing electricity market rules and trends

- New asset class with new rules



Fluence Mosaic™

Global leader in asset-agnostic, AI-powered bidding optimization software & trading services



MOSAIC CAPABILITIES



Price Forecasting



Optimization



Bid Formation

GLOBAL EXPERIENCE, LOCAL EXPERTISE

17+ GW

operating on Mosaic globally

25+

market experts on staff

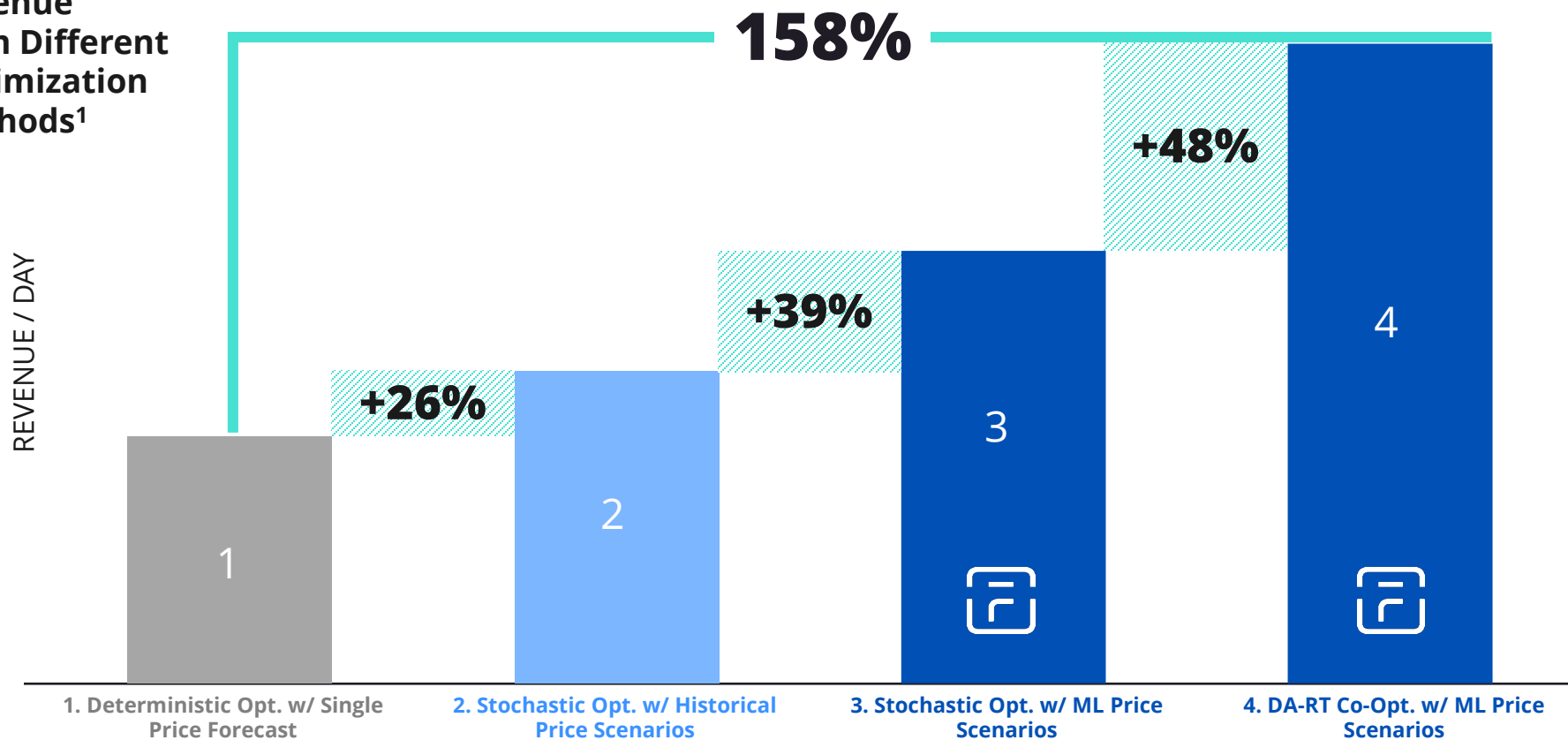
1.5M

operating hours at 99.99% uptime



Continual technology improvements drive greater returns

Average Daily Revenue from Different Optimization Methods¹



158%

revenue increase over less advanced algorithmic optimization techniques



1. Revenue backcast results on 100 MW stand-alone BESS in CAISO during a month in 2024

NEW!

Mosaic is now **tailored** to every trading support need

	Mosaic™	Mosaic Pro™	Mosaic Trading-as-a-Service™
	Market-leading software	Software with hands-on trading advice	Complete trading and bid to bill support
Price forecasting and bid optimization	✓	✓	✓
Daily trading strategy guidance		✓	✓
Daily strategy adjustments and 24/7 market operations support (QSE & SE)			✓

Human "on" the loop

Human "in" the loop

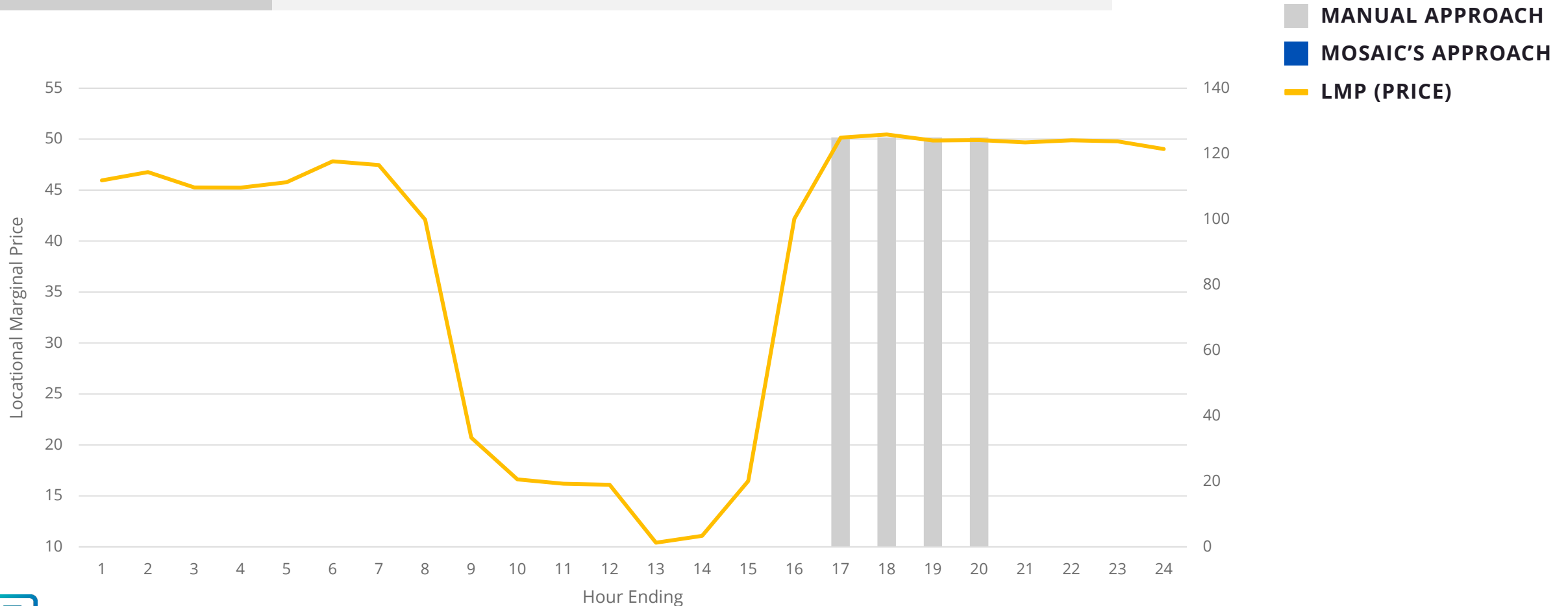


Technology

Case Study: Optimization Can See the Bigger Picture

CUSTOMER QUESTION

Why did Mosaic not discharge to capture peak prices?

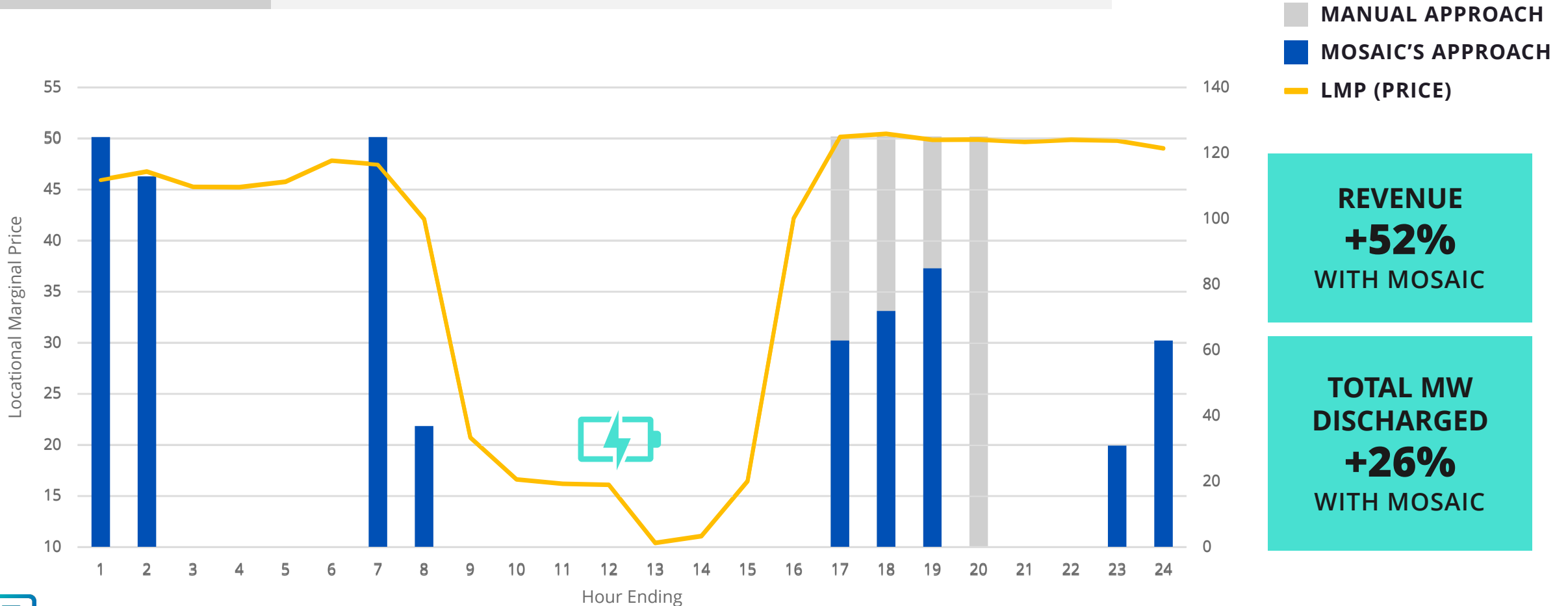


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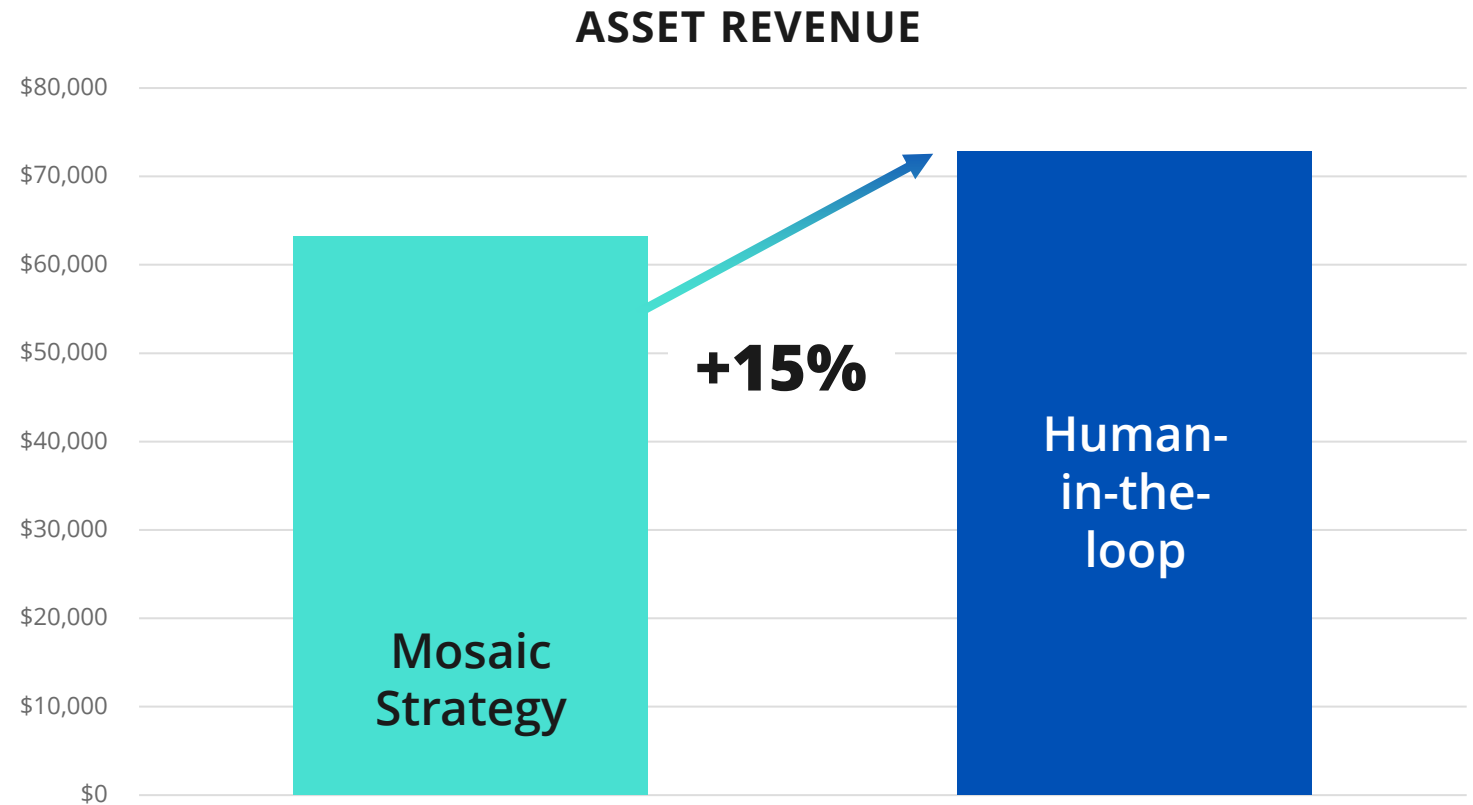
REVENUE
+52%
WITH MOSAIC

TOTAL MW DISCHARGED
+26%
WITH MOSAIC



The Value of Human-in-the-Loop

Expert guidance paired with the power of Mosaic improves customer outcomes



Market Design Thoughts/Desires/Dislikes

1. All products should be biddable
2. Multi-Segment Bids for all biddable products
3. Unrestricted ability to operate within the battery parameters
4. Award restriction is preferred over SOC Management
5. New technologies should not be penalized for shortcomings in regulatory/operations/modeling



Bidding Best Practices/Things to think about

1. LMP and Ancillary Service price forecasting is hard
2. Ancillary Services are a great way to add revenue but the most significant source of uncertainty for a BESS
3. Customers/Assets/Operators need to have a strong understanding of energy market risk, a risk profile for how they will operate in the market and the products they will favor
4. More focus on the cost to provide a service
5. Moving out of the price taker model, building how you bid when BESS is the marginal asset and moving more into game theory for price forecasting and bid creation



Q&A



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