SOLUNA HOLDINGS

The future of renewable energy is computing.

April 2024

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OUR BUSINESS

Soluna harnesses the power of computing to address a huge problem for renewable energy

wasted energy.

OUR PROJECTS

Our data centers are

18% greener

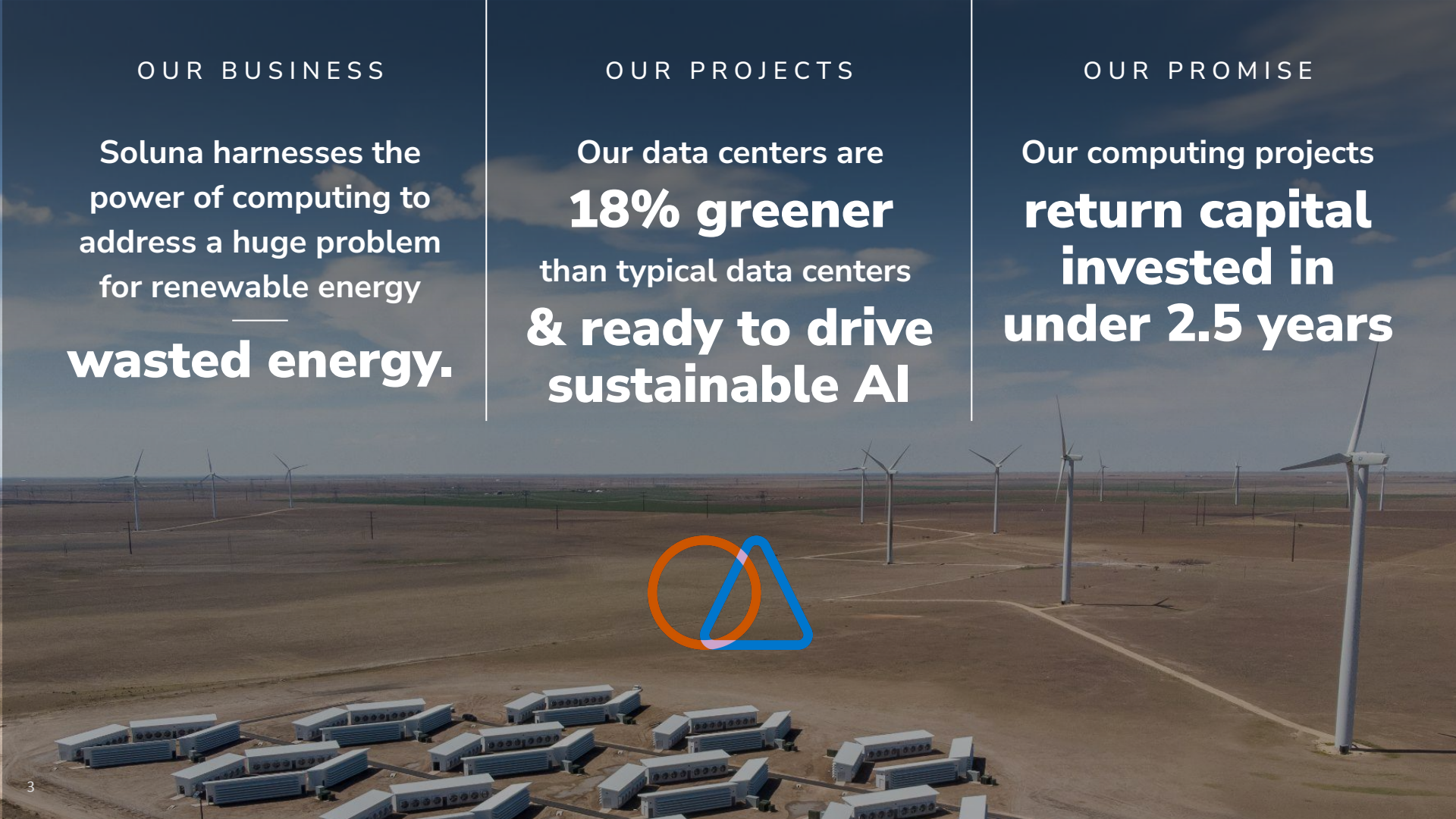
than typical data centers

& ready to drive sustainable AI

OUR PROMISE

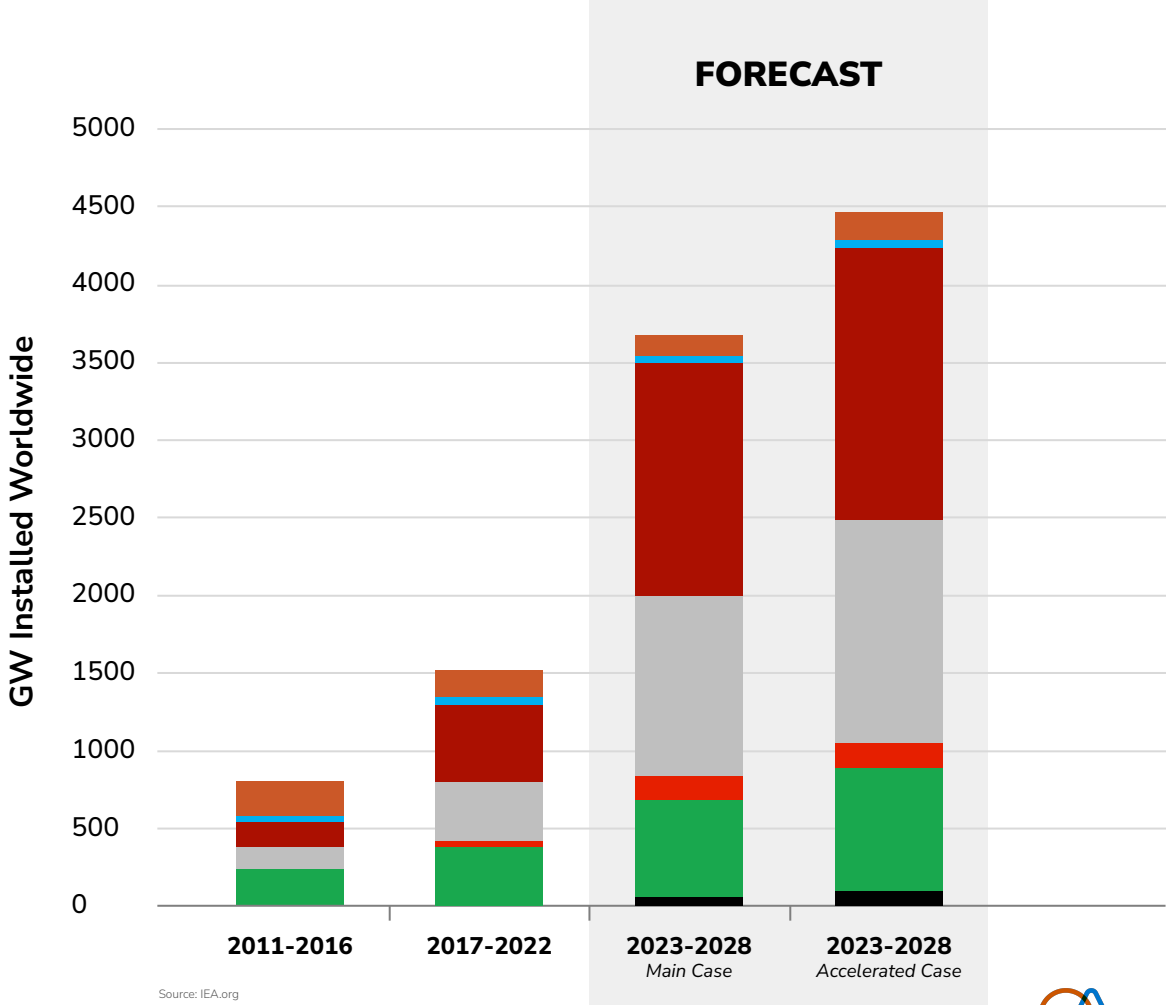
Our computing projects

return capital invested in under 2.5 years

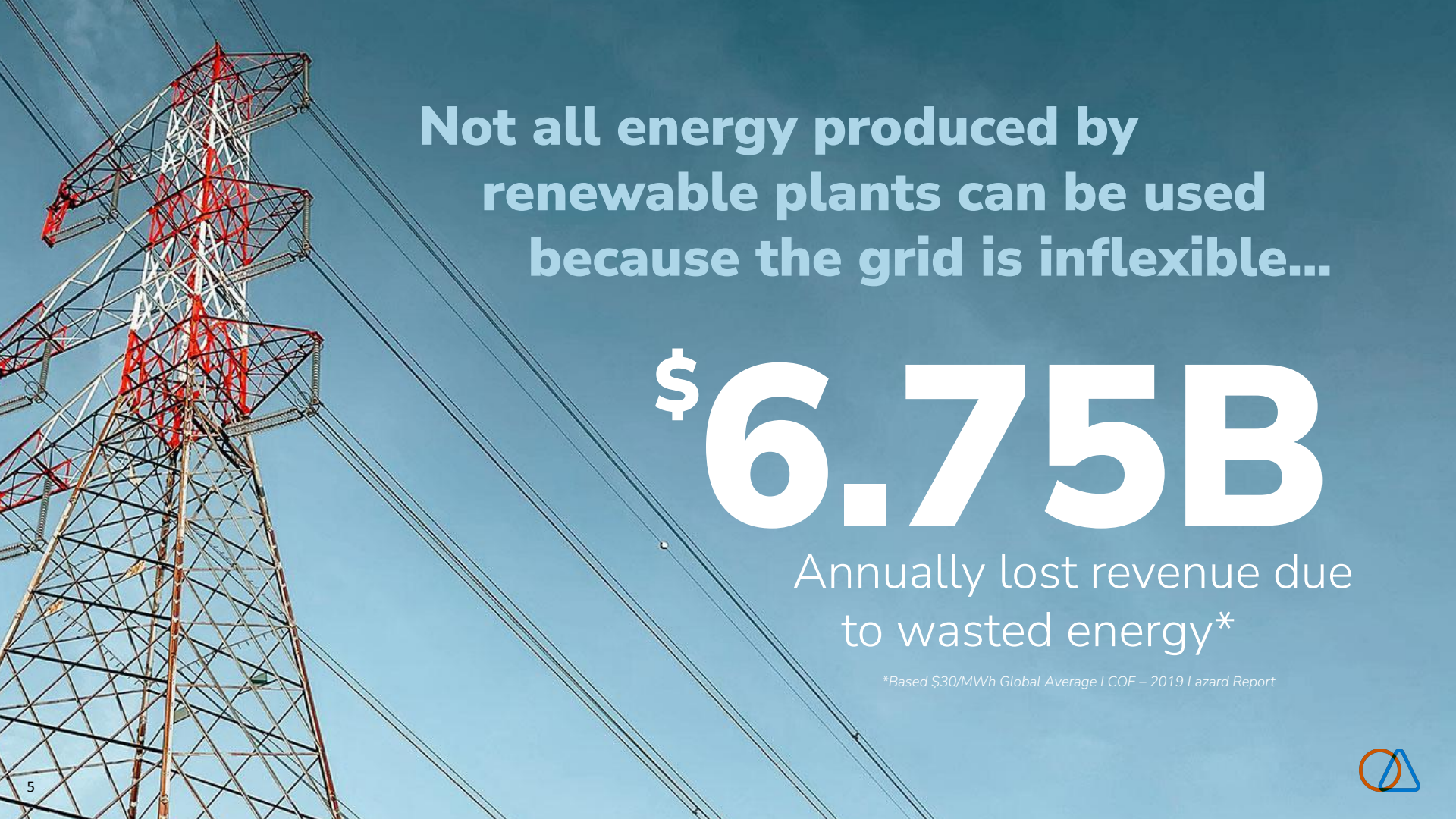


All forms of renewable energy are growing faster than ever

- Hydro
- Ocean
- Bioenergy
- Geothermal
- PV Utility-Scale Systems
- PV Distributed Systems
- Concentration Solar Power
- Offshore Wind
- Onshore Wind
- Renewables Dedicated to H2 Production



Source: IEA.org


Not all energy produced by renewable plants can be used because the grid is inflexible...
$6.75B
Annually lost revenue due to wasted energy*
*Based $30/MWh Global Average LCOE – 2019 Lazard Report

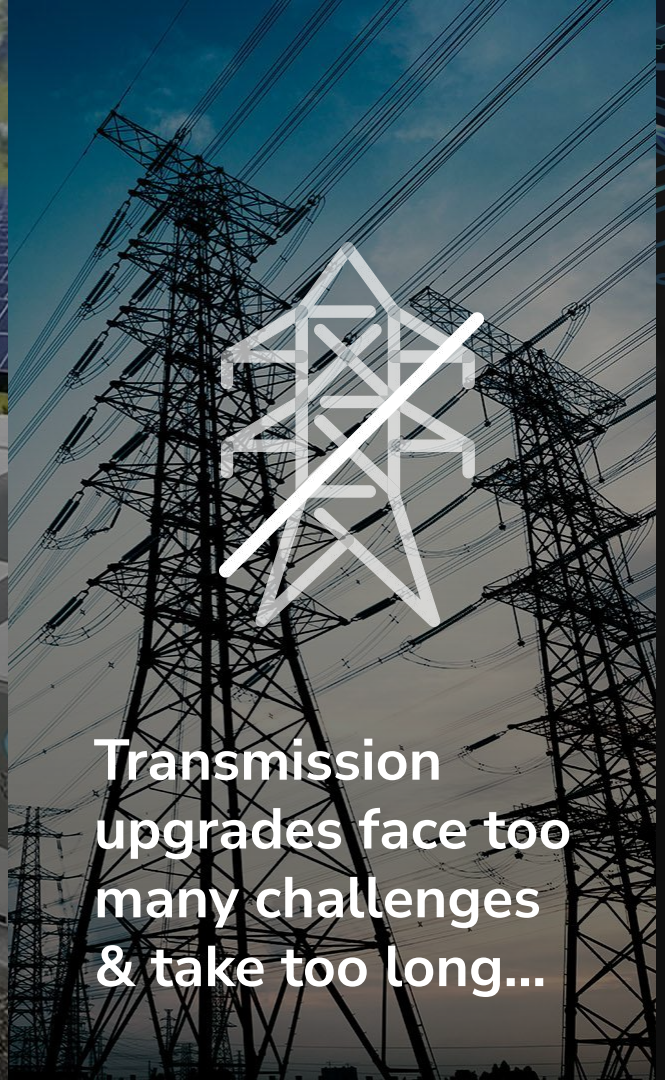

The future of renewable energy is computing...

If it’s used to perform...

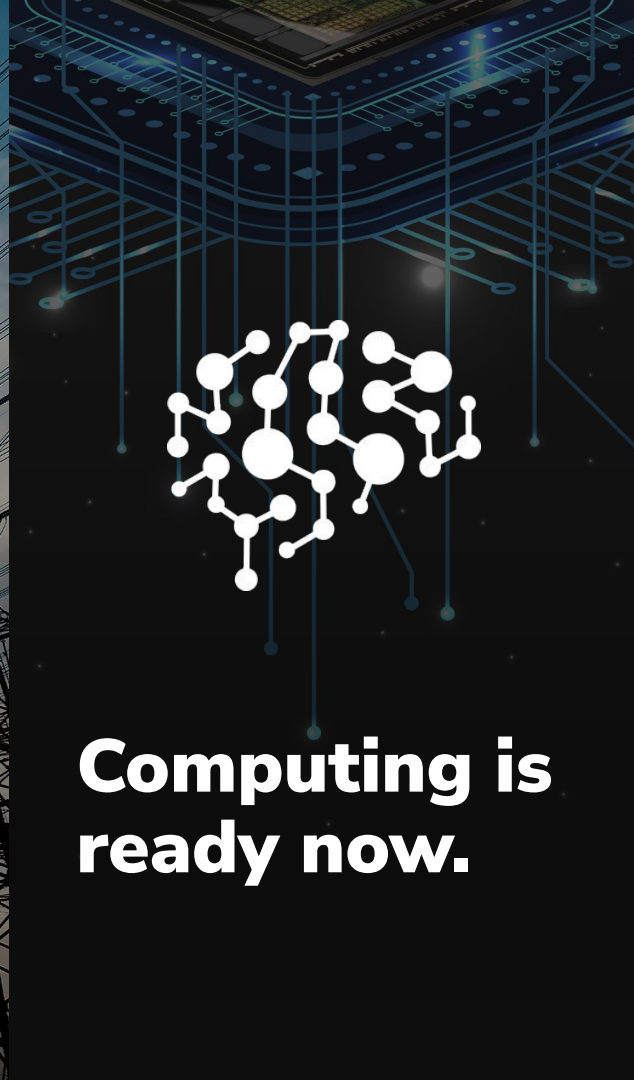
Artificial Intelligence | **Machine learning** | **Natural language processing** | **Bitcoin Mining**

There is a growing demand for computing power that will account for 20% of global energy consumption by 2030. What if we could build data centers that could buy excess renewable energy that would otherwise be wasted?

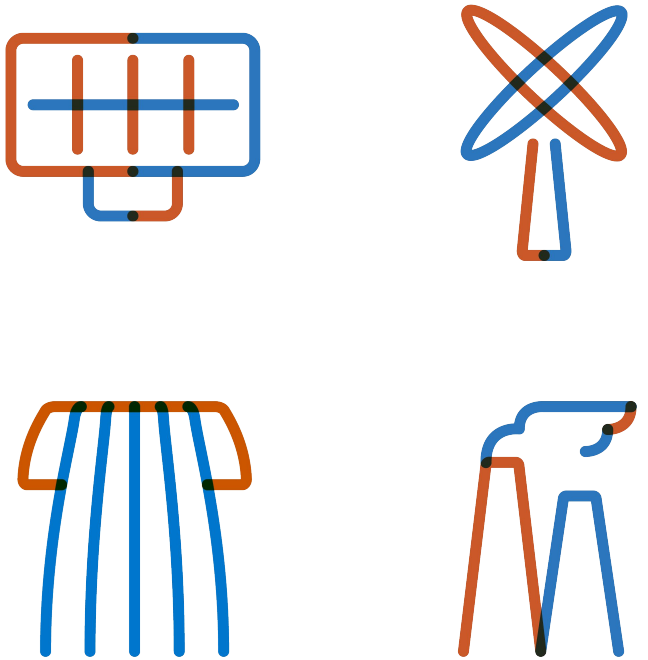
Storage is not yet sufficiently scalable...



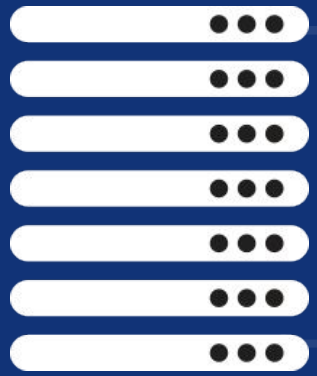
Transmission upgrades face too many challenges & take too long...



Computing is ready now.



Excess energy from renewable sources



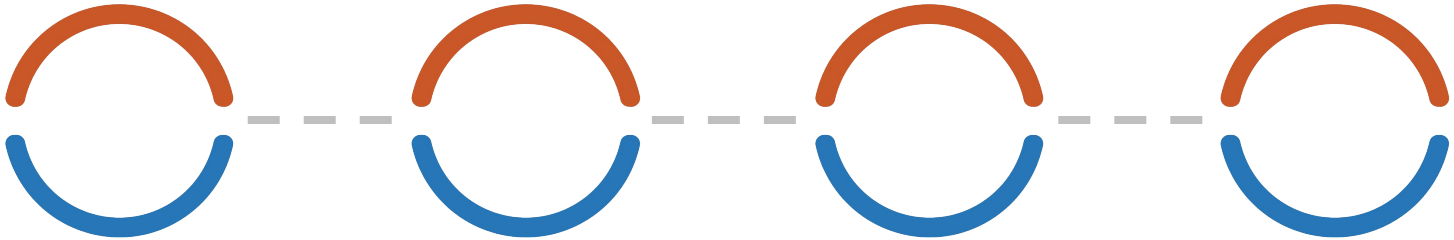
High Performance Computing

Company Overview


Soluna develops data centers co-located with renewable power plants, turning their wasted energy into sustainable computing resources.

Why Soluna

Power producers and computing partners choose Soluna because of our **four pillars of expertise**



Project Development

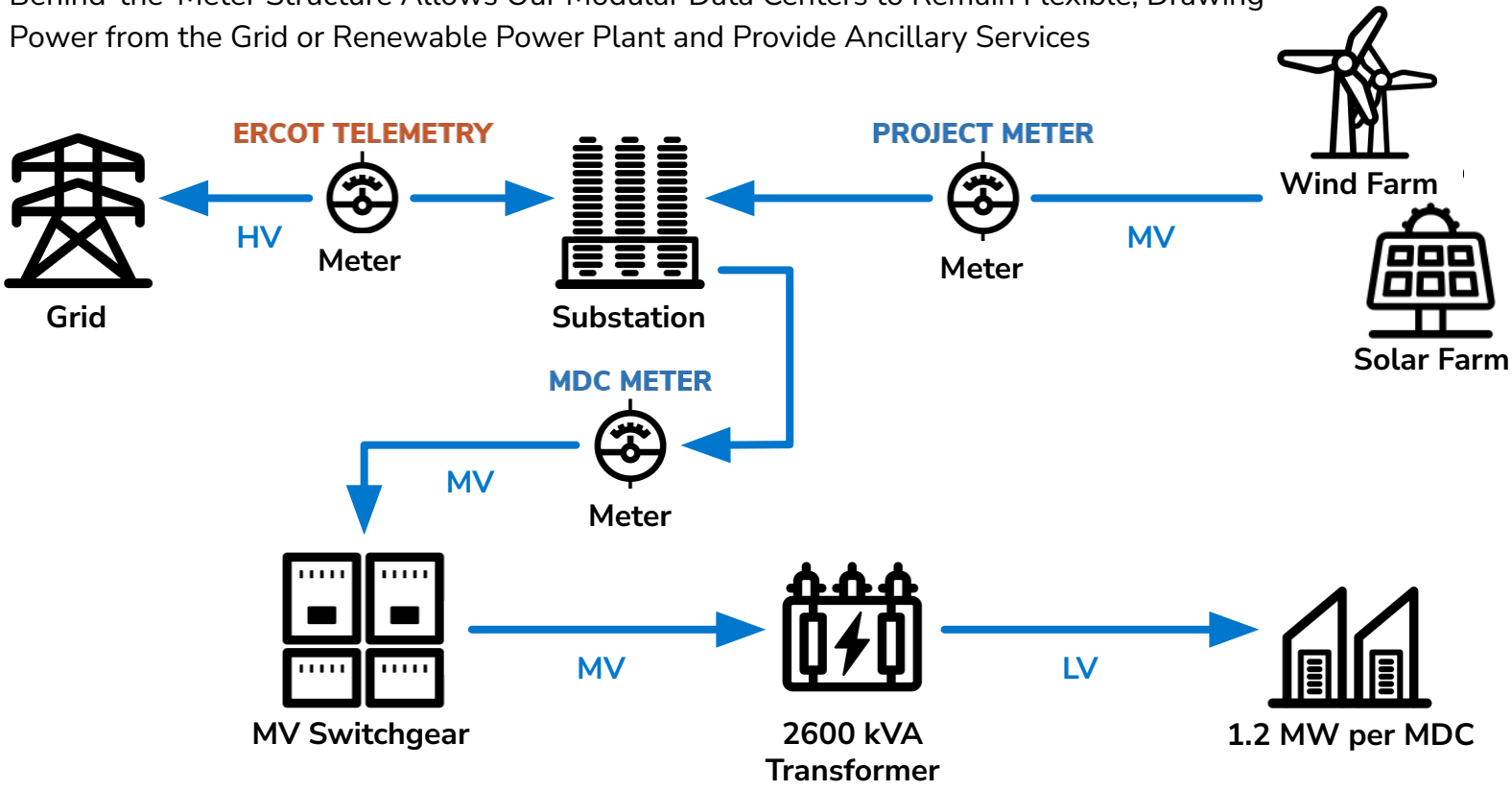
Energy Markets

Computing Technology

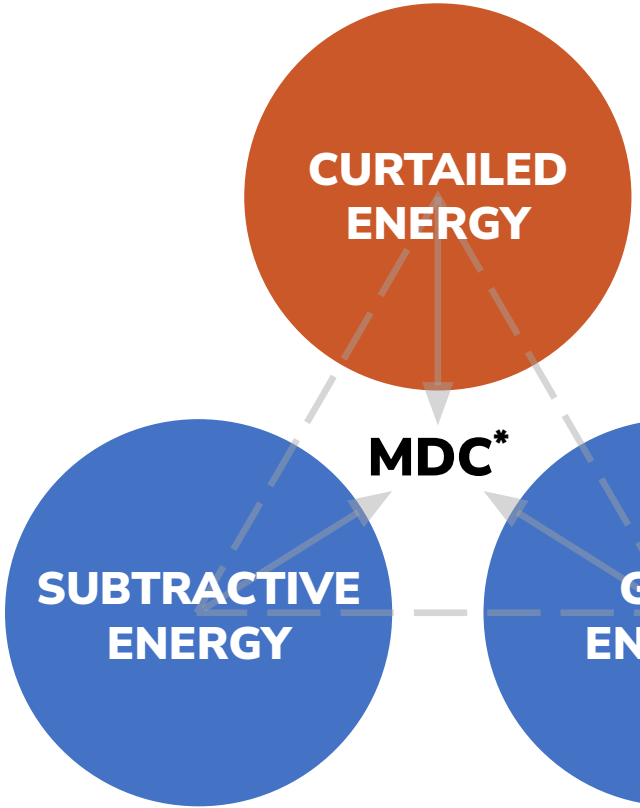
Project Finance

Unique Interconnection Strategy

Behind-the-Meter Structure Allows Our Modular Data Centers to Remain Flexible, Drawing Power from the Grid or Renewable Power Plant and Provide Ancillary Services



How We Source Power for Our Data Centers



Economic/Technical curtailment from negative LMP.

We purchase energy at a fixed price.

Energy that would have gone to grid without the load.

We purchase energy at Project Settlement Point Price (SPP).

Energy that is sourced from the grid in excess of plant production.

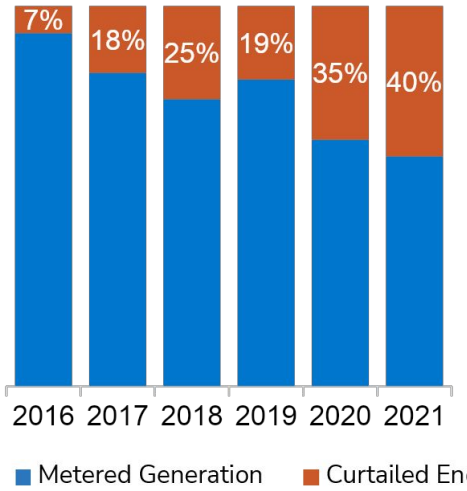
We purchase energy at Load Zone Settlement Point Price (SPP) + Load Ratio Share(LRS) charges.

* Soluna Modular Data Center.

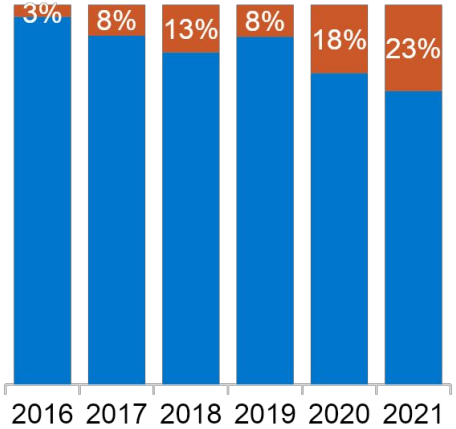
How We're Solving the Wasted Energy Problem

We build data centers that consume curtailed renewable energy

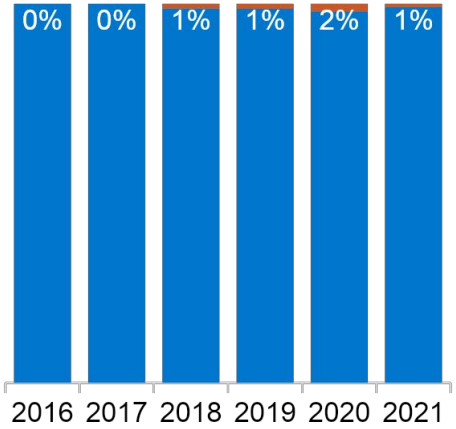
150 MW Wind Farm



+ 50 MW Data Center

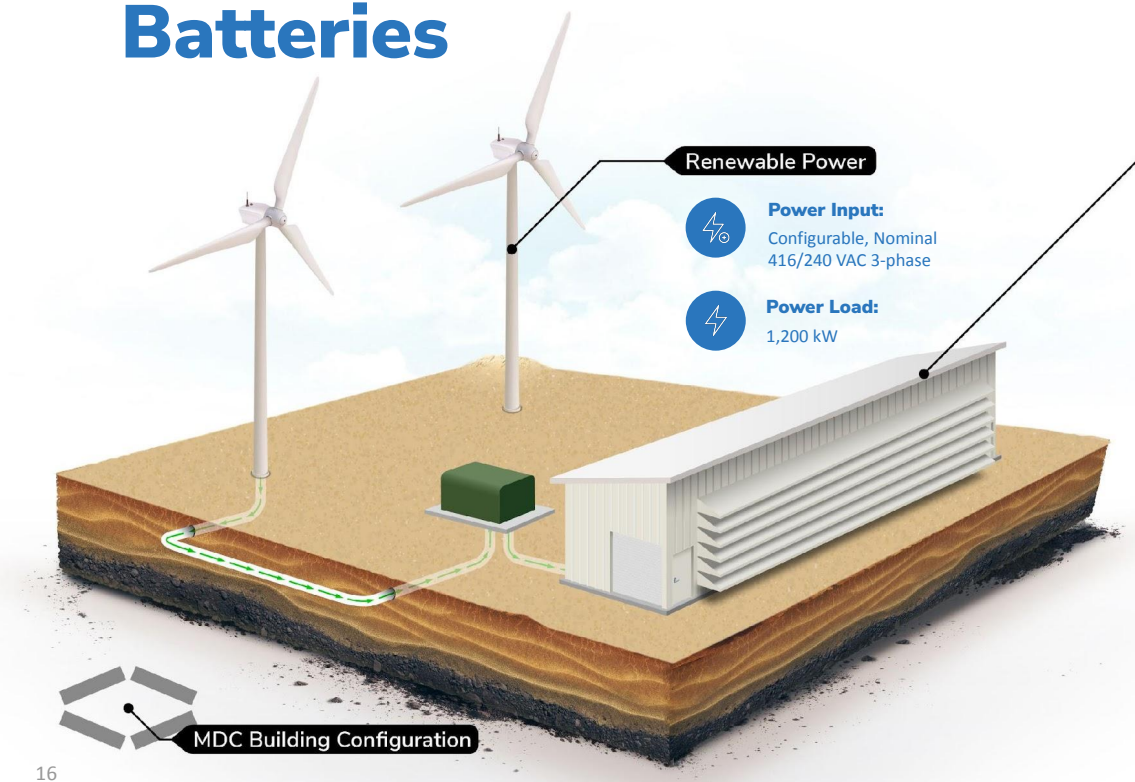


+150 MW Data Center



Our Data Centers Are More Productive Batteries

Purpose-built to efficiently convert curtailed renewable energy into high performance computing.



Power Input:
Configurable, Nominal 416/240 VAC 3-phase

Power Load:
1,200 kW

Monitoring:
Full Remote Monitoring for Operations and Security

Diagnostics and Maintenance:
AI Driven Built-In-Test

Autonomous Operations:
Designed for operation and maintenance by technician level personnel

Processing:
GPU, FPGA, ASIC

Network Input:
10 Gig Ethernet, Wireless Backup

Emergency Shutdown Time:
2s

Boot Time:
90s

Variable Consumption:
1% - 100%

Graceful Shutdown Time:
15-90s (Depending on Processing Configuration)

Physical Dimensions:
70’ x 12’ x 14’ pre-fabricated buildings

MaestroOS Is Our Force Multiplier

Control

Enhancing equipment lifespan and reducing failures through multiple redundancies.

Complete automation of fans, miners, PDUs, power infrastructure, and network.

Implementing robust and redundant computing systems at both the MDC and site levels to eliminate single points of failure.

Utilizes a cloud-based simulator for pre-deployment testing of software and algorithms.

Operations

Real-time tracking of miners, PDUs, networking equipment, and power infrastructure enables centralized site management and remote diagnostics.

Comprehensive diagnostic and alerting system empowers operators to swiftly detect issues and take immediate action.

Pinpoints the exact location of miners and equipment, facilitating the identification of anomalies quickly.

Power

Extensible architecture allows for quick adaptation of algorithms, facilitating seamless integration with various grid and behind-the-meter configurations.

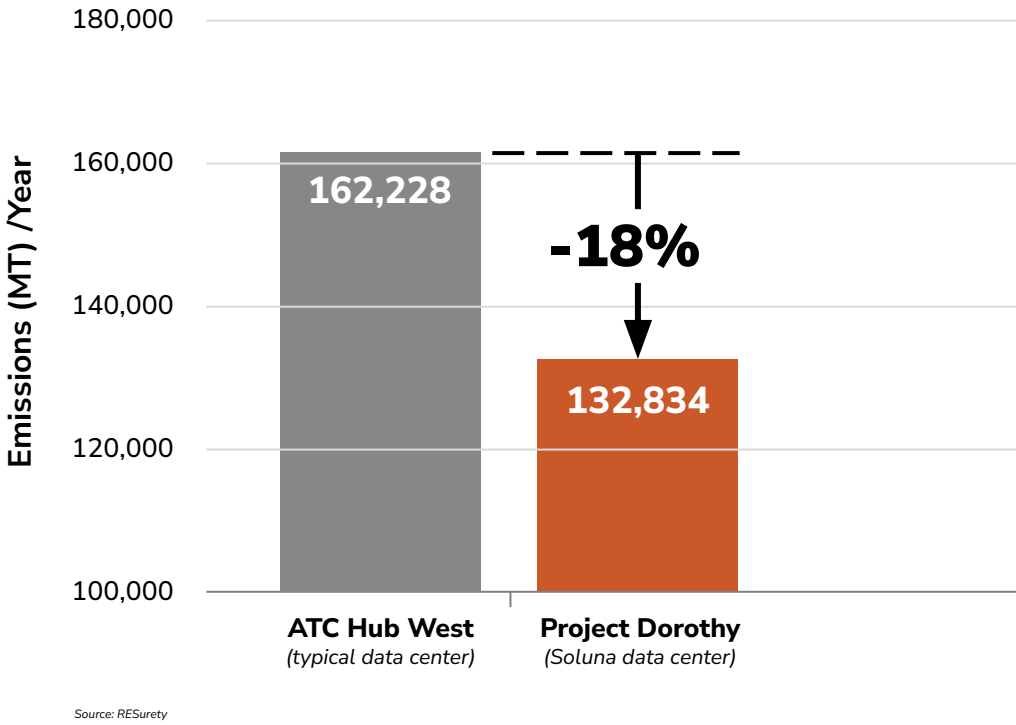
Capable of accepting multiple grid and power stimuli to feed the algorithm.

Achieves 99% curtailment in less than 60 seconds.

Achieves full power restoration within 8 minutes.

Our data centers are 18% greener than typical data centers

Net Carbon Emissions
April 2022 – March 2023



Source: RESurety

How Soluna Makes Money

- Current revenue sources
- Future revenue sources

Prop Bitcoin Mining

- **Soluna or JV owned Bitcoin mining machines**
- *Bitcoin sold daily*
- *Soluna provides Managed Infrastructure Services*

Grid Ancillary Services

- **Compensation to act as behind-the-meter flexible load for the grid**
- *Paid on $ / MWh basis by Utility or Grid Operator*

Hosting for Bitcoin Miners

- **Third-party machines hosted at Soluna Data Centers**
- *Soluna provides Managed Infrastructure Services*

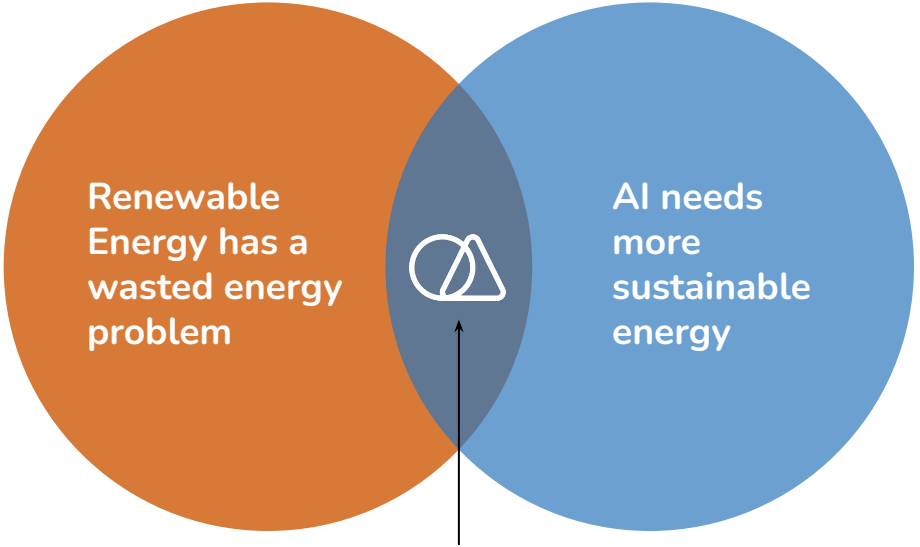
High Performance Computing

- **GPU Cloud – AI/ML, simulation, visualization, predictive analytics, and deep learning**
- *GPU machines could be hosted or owned by Soluna at Projects*

Renewable Computing

Sustainable. Scalable. AI.

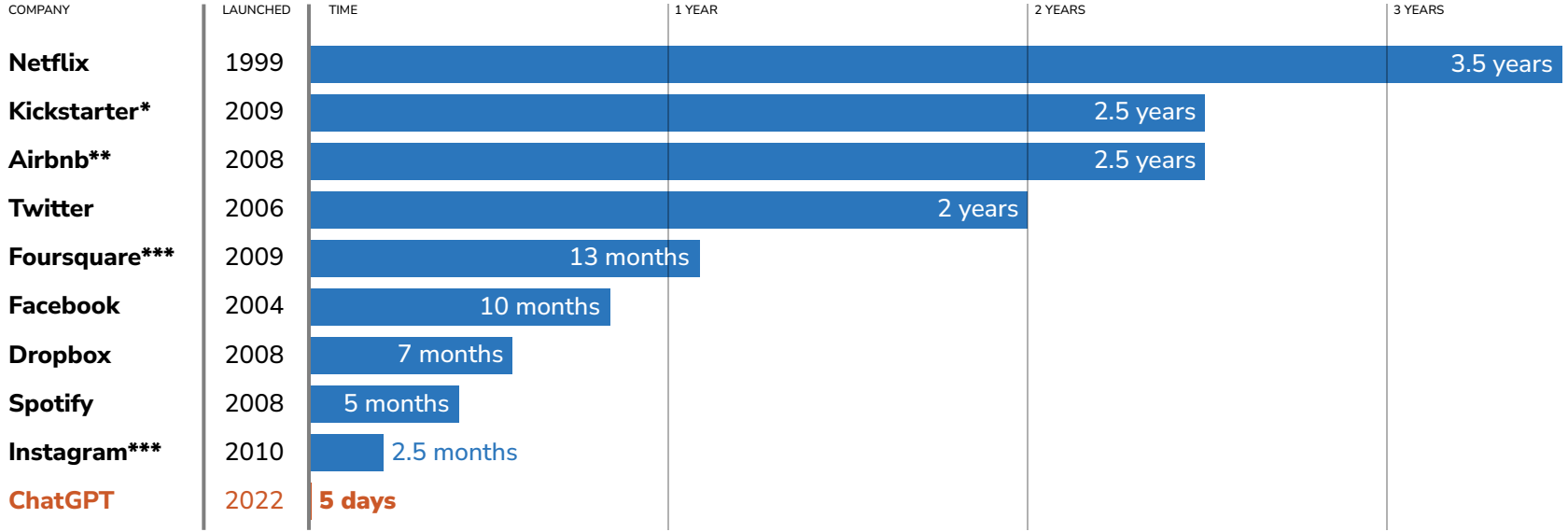
There is a growing demand for computing power that will account for **20% of global energy consumption by 2030.**



Generative AI | **Machine learning** | **Natural language processing** | **Scientific computing**

AI is the fastest growing technology today

Time it took for selected online services to reach one million users



* one million backers: ** one million nights booked. *** one million downloads
Source: Company announcements via Business Insider/LinkedIn/Statista

AI’s hidden challenges

AI is hungry

AI computing’s energy density and space needs exceed current hyperscale data center capabilities. Energy demand for AI is projected to exceed the entire current data center levels. Some estimates put it at 20-30GW.

AI is thirsty

Traditional data centers, particularly those utilized for AI, exhibit substantial water consumption. Microsoft used an estimated equivalent of 2.8 Million glasses of water to train ChatGPT-3 due to the current cooling design of traditional data centers.

AI is dirty

Traditional data centers are responsible for 2% of overall U.S. greenhouse gas emissions. GPT-3, Gopher, BLOOM, and OPT had more than 900 tonnes of carbon emissions.

“Using renewable energy grids for training neural networks is the single biggest change that can be made. It can make emissions vary by a factor of 40, between a fully renewable grid and a full coal grid.”

- Alexandra Luccioni, Hugging Face

The Lifecycle of AI

Gen AI is batchable: Parts of the Generative AI lifecycle are perfect computing applications for co-location with renewable power plants, because they are inherently batchable.

Batchable process

Real-time process

Training

A new model is created from scratch by learning from a large corpus of text. The phase requires the largest number of resources. For example, an iteration of OpenAI's GPT-3 was trained on 10,000 NVIDIA V100 GPUs for 15 days.

Fine Tuning

A pre-trained model is trained further on a smaller, task-specific dataset. This phase is where customers may take an off-the-shelf pre-trained model ad fine-tune it to their proprietary information.

Inferencing

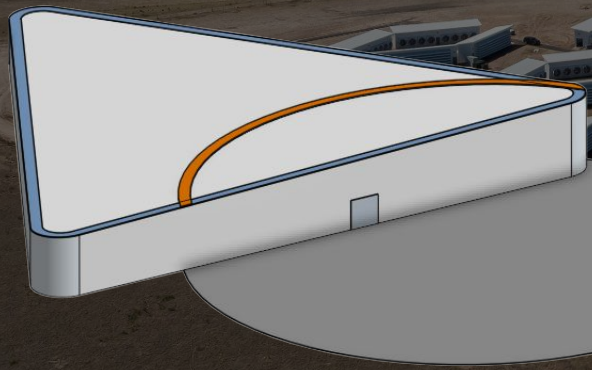
Using a pre-trained model to generate predictions or outputs based on input data. This is 'using' the AI, such as when ChatGPT gives a response, or Stable Diffusion generates an image.

Soluna’s AI Data Center Strategy

Soluna’s Helix Data Centers are purpose-built for AI, with a unique access to power.

Soluna’s behind-the-meter structure allows flexibility for its proprietary data centers - drawing power from the grid or serving as a renewable power plant and providing ancillary services.

This results in scalable, green, plug and play Helix Data Centers with industry-leading metrics.



- Direct Liquid Cooling
- Green Power
- Plug & Play
- Scalable
- Zero Water


We have a massive pipeline of wasted renewable energy to power high performance computing.

Meet the Soluna Leadership Team

150 years of combined experience in starting, managing, and leading companies

John Belizaire
Chief Executive Officer

Michael Toporek
Executive Chairman

John Tunison
Chief Financial Officer

Dipul Patel
Chief Technology Officer

Mary O'Reilly
Chief People Officer

Jessica Thomas
Chief Accounting Officer

Phillip Ng
VP, Corporate Development

Larbi Loudiyi
VP, Power

Dan Golding
Advisor

Operational Highlights 2024

Key Operating Metrics[1]

NASDAQ

SLNH / SLNHP

MW MANAGED

75 MW ▸ 291 MW[2]

INSTALLED HASHRATE

2.5 EH/s[1]

AVERAGE POWER COST*

<$29 / MWh[3]

CURTAILED ENERGY MONETIZED

43,203 MWh[4]

POWER USAGE EFFECTIVENESS (PUE)

1.01

BITCOIN MINERS DEPLOYED

~24,000[1&5]

AVERAGE J / TH/s

~30 J / TH/s

(1) All numbers are as of March 31st, 2024
(2) Sophie (25 MW - operational) + Dorothy 1 (50MW - operational) + Dorothy 2 (50 MW – In Development) + Kati (166 MW – In Development)
(3) 3-month average (December 2023 - February 2024)
(4) Since inception of the Dorothy project.
(5) Includes a mix of Prop Miners and Hosted Miners.
*Levelized Cost of Energy - Calculates present value of the total cost of building and operating a power plant over an assumed lifetime.

Project Dorothy
1A

CAPACITY

25 MW

MODEL

Hosting

INSTALLED HASHRATE

949 PH/s

ENERGIZATION

Operational

POWER USAGE EFFECTIVENESS

1.01

AVERAGE 3-MONTH ANNUAL LCOE*

~$28 / MWh[1]

POWER SOURCE

Wind

PARTNER

Spring Lane Capital

CURTAILED ENERGY CONSUMED

19,601 MWh[2]

(1) 3-month average (December 2023 - February 2024)
(2) Since inception of the Dorothy 1A project.
*Levelized Cost of Energy - Calculates present value of the total cost of building and operating a power plant over an assumed lifetime.

Project Dorothy
1B

CAPACITY

25 MW

MODEL

Prop Mining

INSTALLED HASHRATE

817 PH/s

ENERGIZATION

Operational

POWER USAGE EFFECTIVENESS

1.01

AVERAGE 3-MONTH ANNUAL LCOE*

~$28 / MWh[1]

POWER SOURCE

Wind

PARTNER

Navitas Global

CURTAILED ENERGY CONSUMED

11,301 MWh[2]

(1) 3-month average (December 2023 - February 2024)
(2) Since inception of the Dorothy 1A project.
*Levelized Cost of Energy - Calculates present value of the total cost of building and operating a power plant over an assumed lifetime.

Project Sophie

CAPACITY

25 MW

MODEL

Hosting

INSTALLED HASHRATE

778 PH/s

ENERGIZATION

Operational

POWER USAGE EFFECTIVENESS

1.02

AVERAGE 3-MONTH ANNUAL LCOE*

~$29 / MWh[1]

POWER SOURCE

Hydro/Grid

PARTNER

None

(1) 3-month average (December 2023 - February 2024)
*Levelized Cost of Energy - Calculates present value of the total cost of building and operating a power plant over an assumed lifetime.

Project Pipeline

Project Dorothy 2

CAPACITY

50 MW

MODEL

Hosting & AI

POWER SOURCE

Wind

ENERGIZATION

Design & Planning

PARTNER

TBD

AVERAGE ANNUAL LCOE

~$27 / MWh

Project Kati

CAPACITY

166 MW

MODEL

Hosting

POWER SOURCE

Wind

ENERGIZATION

Development

PARTNER

TBD

AVERAGE ANNUAL LCOE

~$30 / MWh

We have a growing pipeline of projects

Data Centers & Pipeline

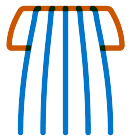
25MW
Sophie
Operating

100MW
Dorothy
50MW Operating

166MW
Kati
Design & Development*

2GW+ long-term pipeline with large IPPs and infrastructure funds in the US and beyond

Powered by

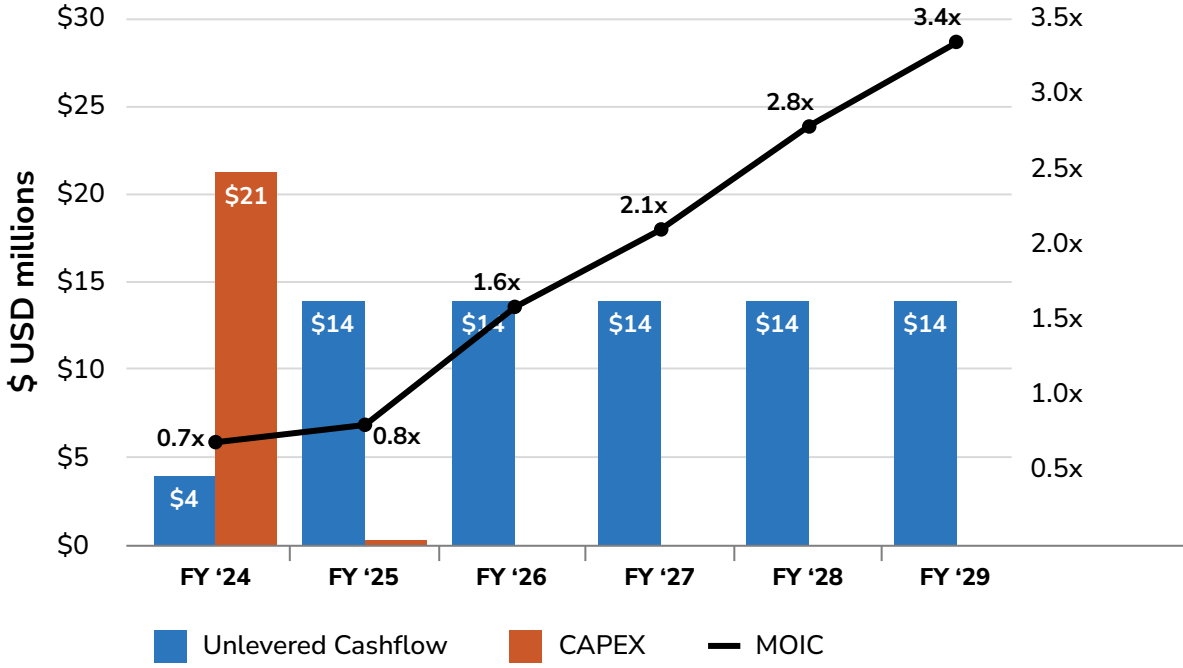


*Design – design and development activities with the IPP underway and submission to ERCOT LFL started.

Financial Results 2023

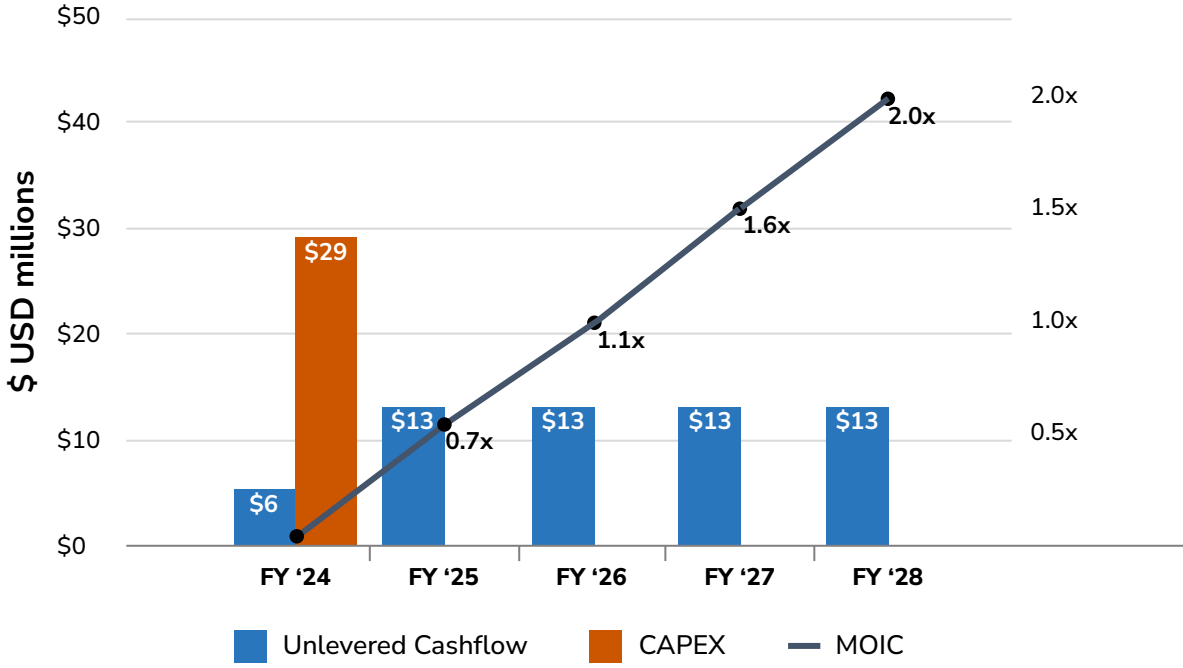
Data Center Economics | Bitcoin Hosting

Compute (MW)	48.0
Construction timeline	6 months – 50% complete 12 months – 100% Complete
Total Capex	$21.6mm
Run Rate EBITDA	$14.0mm
MOIC / IRR	3.4x / >45%
Payback (Months)	~27 Months



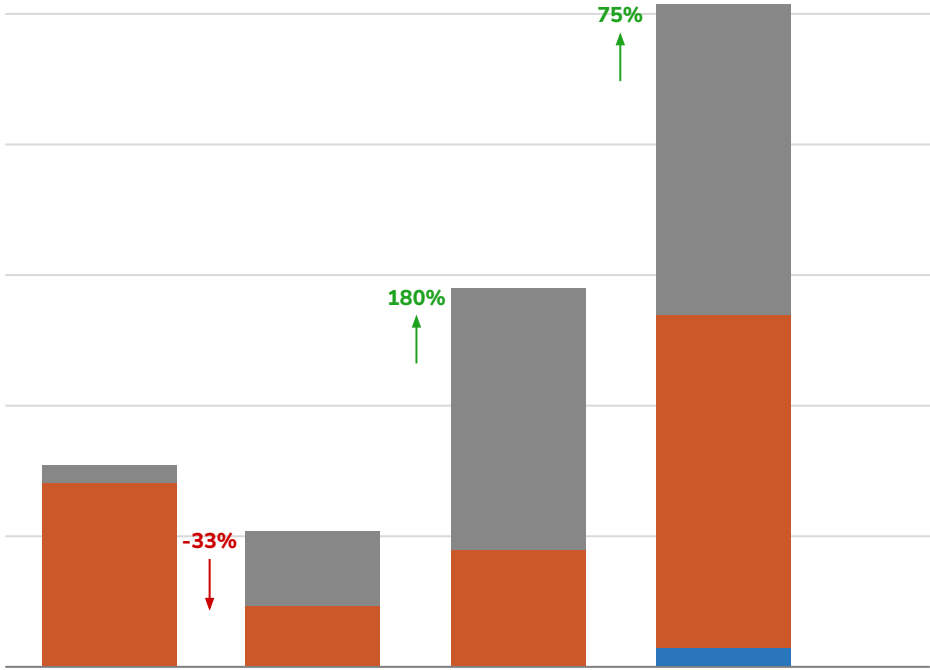
Data Center Economics | Generative AI

Compute (MW)	1.0
Construction timeline	6 months – 25% complete 9 months – 100% Complete
Total Capex	$29.5mm
Run Rate EBITDA	$13mm
MOIC / IRR	2x / >40%
Payback (Months)	~27 Months



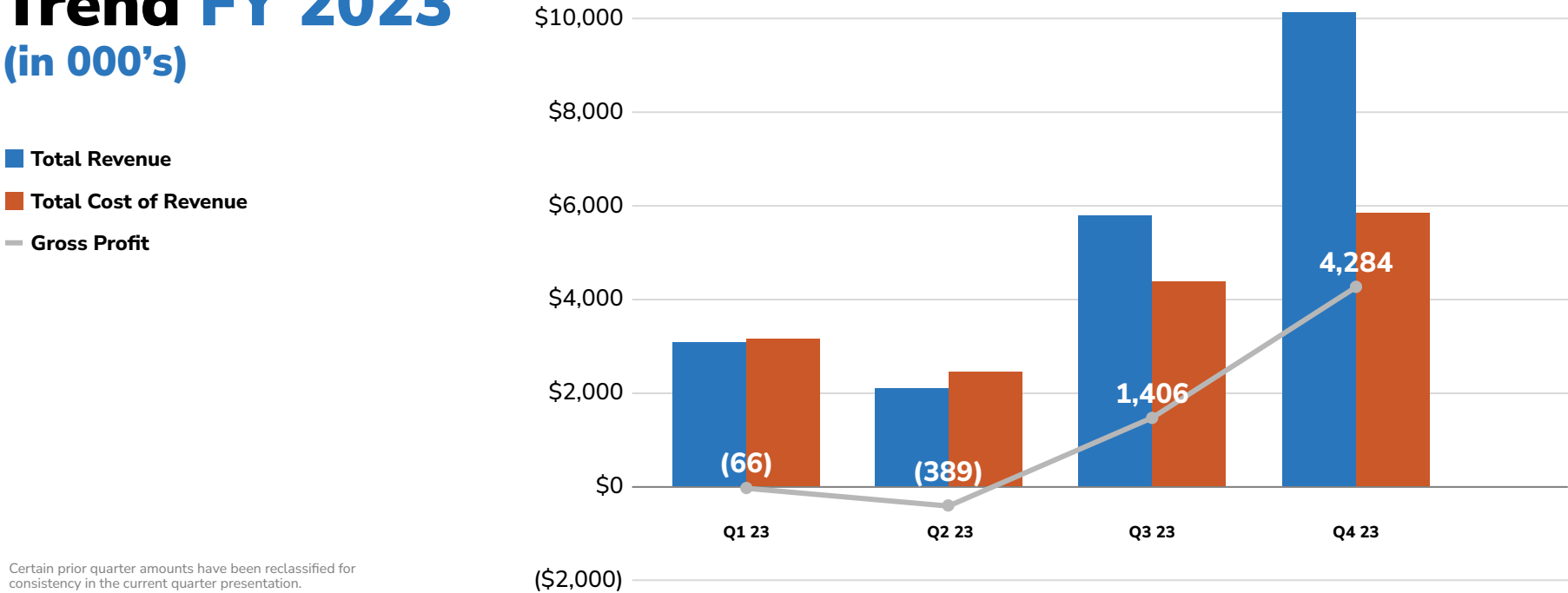
Revenue Quarterly Trend FY 2023
(in 000's)

Includes Revenue % Change Quarter over Quarter



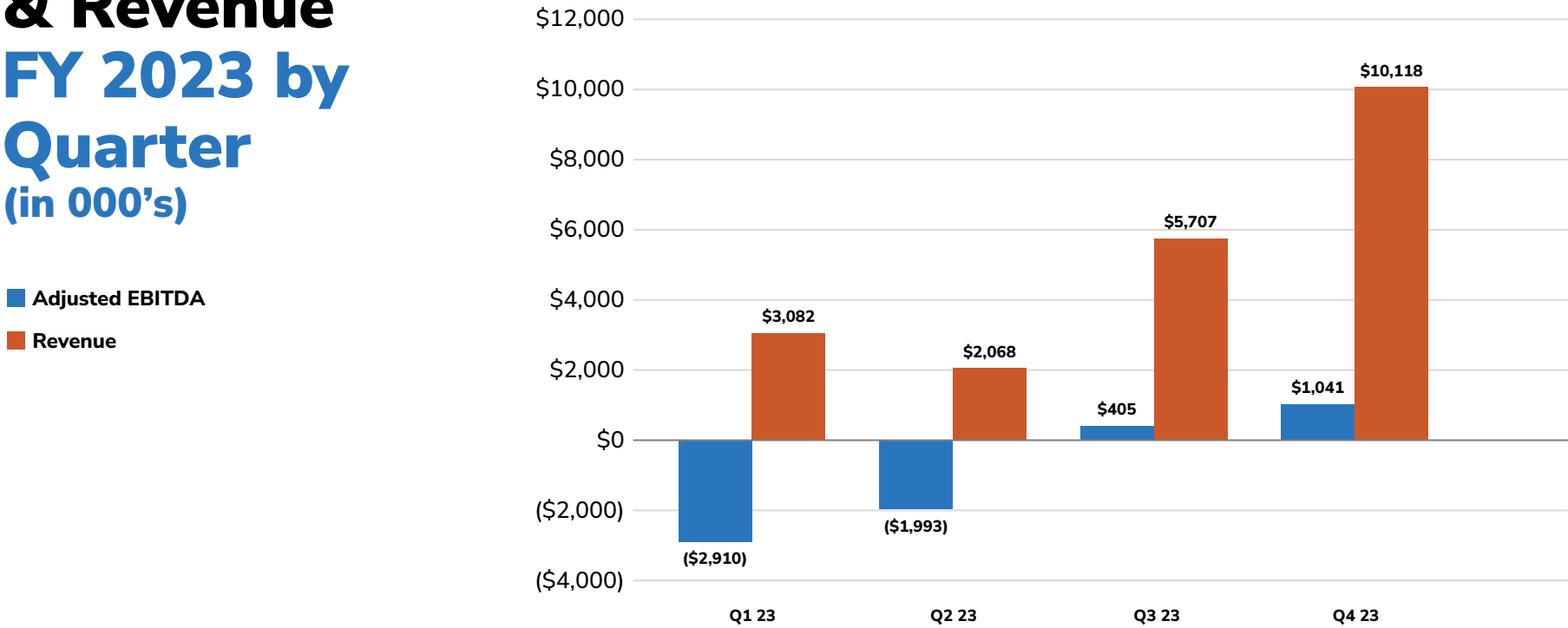
	Q1 23	Q2 23	Q3 23	Q4 23
Data Hosting Revenue	286	1,153	4,011	4,745
Cryptocurrency Mining Revenue	2,796	915	1,786	5,105
Ancillary Services Revenue	—	—	—	286
Grand Total	3,082	2,068	5,797	10,118

Gross Profit Quarterly Trend FY 2023
(in 000's)



Certain prior quarter amounts have been reclassified for consistency in the current quarter presentation.

Adjusted EBITDA & Revenue FY 2023 by Quarter (in 000's)



Enterprise Value

$ mm, except share prices	12/31/2023	12/31/2022	$Chg
Stock Price	*$ 4.00*	*$ 6.50*	
x Basic Shares Outstanding	*2.546*	*0.789*	
Fully Diluted Common Equity Value	**$ 10.19**	**$ 5.13**	**$ 5.06**
(+) Series A Preferred Stock @ Market	$ 11.02	$ 4.90	
(+) Series B Preferred Stock @ Face	$ 6.25	$ 6.25	
Fully Diluted Equity Value incl. Preferred	**$ 27.46**	**$ 16.27**	**$ 11.18**
EV Adj.			
(-) Cash & Cash Equivalents	$ (9.40)	$ (1.82)	
(+) Total Debt	$ 19.54	$ 23.55	
Net Debt Adj.	**$ 10.15**	**$ 21.73**	**$ (11.59)**
Enterprise Value before Minority Interests (NCI)	**$ 37.60**	**$ 38.00**	**$ (0.40)**
(+) Minority Interests	**$ 26.85**	**$ 4.41**	**$ 22.44**
Enterprise Value	**$ 64.45**	**$ 42.41**	**$ 22.04**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