BREAKTHROUGH LOW-COST, MULTI-DAY ENERGY STORAGE

David Hill - Director, Business Development & Operations
Rising to the challenge of climate change with a team that will deliver

LED BY ENERGY STORAGE VETERANS
Decades of cumulative experience in energy storage
- 100’s of MW of storage deployed

OUR INVESTORS: LONG-TERM AND IMPACT-FOCUSED

$820M+ in venture capital from top investors including:
- Breakthrough Energy Ventures (BEV), TPG’s Climate Rise Fund,
- Coatue Management, GIP, NGP Energy Technology Partners III,
- ArcelorMittal, Temasek, Energy Impact Partners, Prelude Ventures,
- MIT’s The Engine, Capricorn Investment Group, Eni Next, Macquarie
  Capital, Canada Pension Plan Investment Board, and other
  long-term, impact oriented investors

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The Challenge

The electrical grid needs to fundamentally transform to meet the challenges posed by climate change.

- Intermittency of renewable assets creates periods of undersupply
- Carbon mandates require retirements and risk stranding fossil assets
- Extreme weather events become more frequent and disruptive to customers
- Increased transmission congestion and long interconnection queues
The tech gap: 4.7 TW opportunity to replace fossil plants globally

Forecast Global Generation Capacity with Existing Commercial Technologies

**Change:** As the grid electrifies and renewable costs plummet:
- >4x growth in renewables
- 12.8 additional TW of capacity

**Obstacle:** Legacy fossil remains to maintain reliability as electric demand rises.

**Opportunity:** Eliminate ~4.7 TW of fossil power plants by firming renewable energy

Source: BNEF New Energy Outlook (2020)
Reliability challenges are universal - increasingly weather driven

**Great Britain** Multi-Day Weather Event, 2050

Exhibit 1.6 – Generation and consumption gap (illustrative, across a period with January 2017 weather, with 2050 demand and renewable capacity mix)

Source: AFRY, BEIS - Benefits of Long Duration Energy Storage (2022)

**South Africa** Daily 20 hour load shedding across the country

Source: Ekson Energy Portal (2022)

**California** Multi-Day Weather Event in Winter, 2050


**India** Rapid demand growth + decarbonisation

**India: Power Shortage Crisis in April**

Record peak shortages; exchange prices hitting the ceiling

12,000MW peak power shortage

15Rs/kWh

Daily IEX price

April 28 10,800MW

IEEFA

Sources: IEX, NLDC
Form MDS is the only technology targeting multi-day duration without geographic constraints.
Commercial progress underway

Partnering with Great River Energy to deploy a first-of-its-kind 1.5 megawatt/150 megawatt hour multi-day energy storage project in Cambridge, Minnesota in 2024

“Great River Energy is excited to partner with Form Energy on this important project. Commercially viable long-duration storage could increase reliability by ensuring that the power generated by renewable energy is available at all hours to serve our membership,” said Great River Energy Vice President and Chief Power Supply Officer Jon Brekke.

Collaborating with Georgia Power on a project application of up to 15 megawatts/1500 megawatt hours (MW/MWh) of energy storage systems to be located in the utility’s service area

“At Georgia Power, we know that we must make smart investments and embrace new technologies now to continue to prepare for our state’s future energy landscape,” said Chris Womack, Chairman, President and CEO of Georgia Power. “We’re excited to have Form Energy as a partner to help us build on Georgia’s solid energy foundation.”

Partnering with Xcel Energy to deploy two 10 MW / 1,000 MWh multi-day storage systems; one in Becker, MN and one in Pueblo, CO. Both projects are expected to come online as early as 2025

"As we build more renewable energy into our systems, our partnership with Form Energy opens the door to significantly improve how we deliver carbon-free energy so that we can continue to provide reliable and affordable electric service to our customers well into the future.” said Bob Frenzel, Xcel Energy President and CEO.
Form Factory 1: commercial-scale manufacturing

Transforming Weirton steel land for battery manufacturing in West Virginia

- **Total Local Investment:** $760 million
- **Construction Start:** Early 2023
- **Production Start:** Late 2024
- **Jobs:** Minimum of 750 full-time jobs

**Location Benefits**
- Close to our existing pilot manufacturing facility in PA
- Strong natural infrastructure
- Local manufacturing know-how

**Factory Function**
- Semi-to-fully automated cell, module, & enclosure assembly
- Ability to scale production in modular blocks
The Solution
Rechargeable iron-air is the best technology for multi-day storage

100-hour Reversible Rust Battery

- **COST**: Lowest cost rechargeable battery chemistry. Less than 1/10th the cost of lithium-ion batteries.
- **SAFETY**: Non-flammable aqueous electrolyte. No risk of thermal runaway.
- **SCALE**: Uses materials available at the global scale needed for a zero carbon economy. High recyclability.
- **DURABILITY**: Iron electrode durability proven through decades of life and 1000’s of cycles.
# Form Energy’s modular 100hr multi-day storage system

<table>
<thead>
<tr>
<th>Component</th>
<th>Power Capacity</th>
<th>Volume</th>
<th>Number</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cell</strong></td>
<td>~0.10 kW / 10 kWh</td>
<td>~1m x 60 cm</td>
<td>Electrodes + Electrolyte</td>
<td>Smallest Electrochemical Functional Unit</td>
</tr>
<tr>
<td><strong>Battery Module</strong></td>
<td>~5 kW / 500 kWh</td>
<td>~2.3 x 1.3 x 1.3m</td>
<td>~50 Cells</td>
<td>Smallest Building Block of DC Power</td>
</tr>
<tr>
<td><strong>Enclosure</strong></td>
<td>~50 kW</td>
<td>8.6’ x 40’</td>
<td>~10 Modules</td>
<td>Product Building Block with integrated module auxiliary systems</td>
</tr>
<tr>
<td><strong>Power Block</strong></td>
<td>~3.5 MW / 350 MWh</td>
<td>&lt;2 acres</td>
<td>~50 - 100 Enclosures</td>
<td>Smallest independent system and AC Power building block</td>
</tr>
<tr>
<td><strong>System</strong></td>
<td>100+ MW / 10 GWh</td>
<td>50+ acres</td>
<td>10s - 100s of Power Blocks</td>
<td>Commercial Intent System</td>
</tr>
</tbody>
</table>
The Benefits
Iron-Air MDS has the potential to save New York $8b/yr or 20% of total system costs in a fully decarbonised grid in 2040.

To meet deep decarbonization goals in such systems, a portfolio with Form’s MDS technology results in substantially lower costs and total needs for new capacity.

MDS acts as a firm capacity replacement for thermal assets, better integrating intermittent renewables and seasonally shifting energy.
Multi-day storage operates year-round to balance seasonal, multi-day, and intra-day variability in renewables.

**Discharge over multi-day low renewable generation events**

- **Multi-Day**: Shifts month-to-month renewable variability
- **Seasonal Up**: Discharge over multi-day low renewable generation events
- **Seasonal Down**: Discharge in 8-12 hour bursts over low renewable generation
- **Intra-Day**: Net charge with excess renewables
  - (net discharge during peak load season)
100% Renewable microgrids can leapfrog traditional grid system
Renewables plus lithium-ion only gets you 80 - 90% of the way there
Around the clock reliable renewable energy requires multi-day storage.
Around the clock reliable renewable energy requires multi-day storage
Thank you!

David Hill
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