

# Strategic Metals & Rare Earths Letter

## INTERNATIONAL

*the independent information and advisory publication on investing in Strategic Metals & Rare Earths*

Special Situation – June 2019

[www.cellcubenergystorage.com](http://www.cellcubenergystorage.com)



### CellCube Energy Storage (C\$ 0.09)

CSE : CUBE  
OTCQB : CECBF  
Frankfurt : 01X

H + L prices (12 months) : C\$ 0.54 – 0.085

Net shares issued : 181.15 million  
Fully diluted shares : 241.56 million

Market Capitalization : C\$ 16.3 million  
(US\$ 12.0 million)

**2019 price target: C\$ 0.20**

### Company profile

**CellCube** is focused on the fast-growing energy storage industry which is driven by the large increase in demand for renewable energy. The Company supplies vertically integrated energy storage systems to the power industry and acquired the assets of Gildemeister Energy Storage, now **Enerox**, the developer and manufacturer of CellCube Energy Storage Systems.

**CellCube** also acquired **EnerCube Switchgear Systems** and **Power Haz Energy Nobile Solutions** and has also invested in an online renewable energy financing platform, **Braggawatt Energy**.

**CellCube** develops, manufactures and markets energy storage systems on the basis of vanadium redox flow technology and has over 130 project installations and a 10-year operational track record.

**CellCube's** integrated energy storage system solutions featured 99% residual energy capacity after 11,000 cycles (cycling daily for 28 years) in 40-foot containerized models. Basic building blocks consist of a CellCube unit family with 2, 4, 6, 8- and 12-hours variation in energy capacity.



**CellCube** vanadium flow batteries are used for a variety of purposes including grid storage, micro grids; off-grid storage for solar and wind power storage; diesel power replacement; back-up power systems; farming applications; electric vehicle charging stations; industrial plants; office building applications; emerging power sources and many other uses.

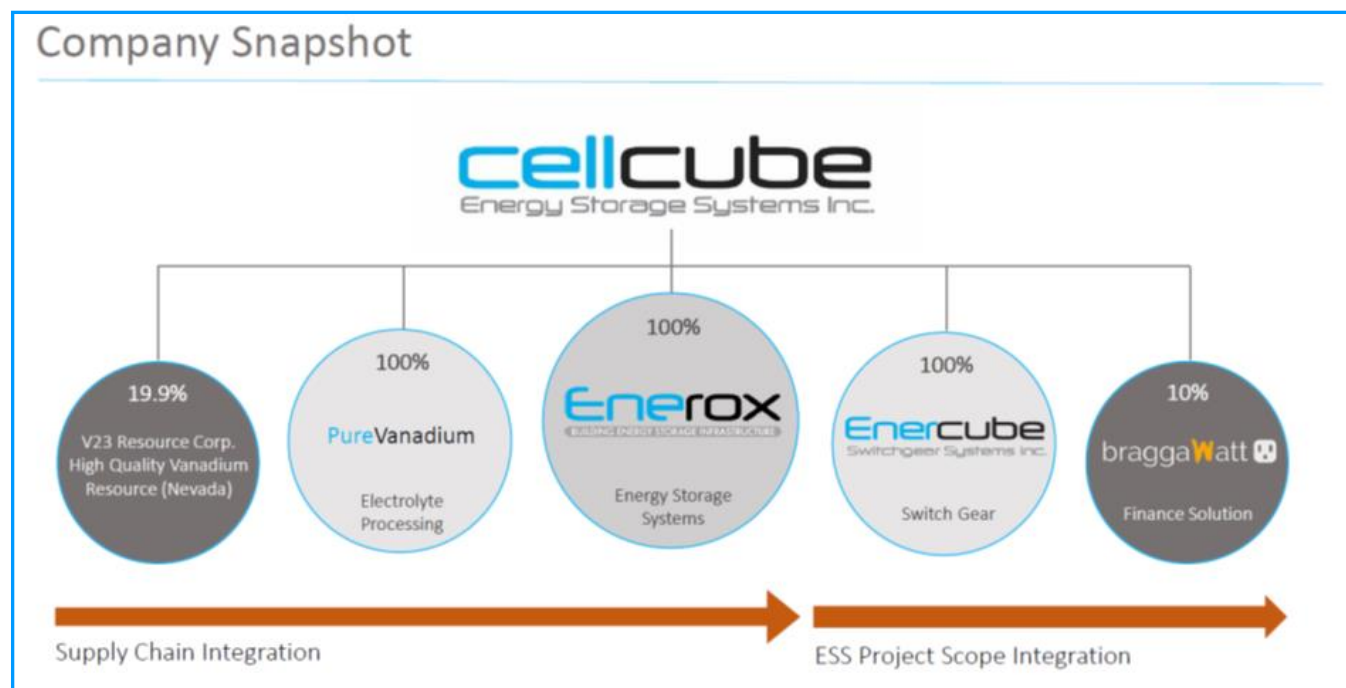
Since acquiring the Austrian based Enerox business in April 2018, **CellCube** has continued to deliver a worldwide sales growth initiative to expand its reach through existing customers and the addition of new sales opportunities. **Enerox** holds 19 active patent families including 40 files patents for its core intellectual property which were fully developed by its in-house research and development team. The development team continues to secure IP protection on its new technology developments and production process. These efforts have been rewarded through the InterSolar EES award for best storage solution.

**Many of the current sales are a gateway into larger opportunities on a market that Bloomberg estimates will grow above a \$ 135 billion and representing 300 GWh by 2030.**

Sales growth in other markets continues to be secured including battery installation in Germany, Sweden, Czech Republic, France and Thailand. **CellCube** continues to build a large pipeline of projects focusing on large-scale energy storage.

One of the biggest factors increasing market demand for energy storage is growing government emphasis in renewable energy around the world. An example would be the National Renewable Energy Plan of the European Economic Union, which reported targets of 330% (Netherlands), 213% (Poland); 199% (Greece); 244% (United Kingdom) increase in electricity from renewable energy from 2010 to 2020. To reach these targets, storage must be implemented into the grid.

Many places in the world do not have grid-scale infrastructure. They typically use expensive diesel generation which can easily be replaced by environmentally friendly wind or solar power and **CellCube** batteries. Under-developed areas in Africa are examples. Diesel replacement also provides an opportunity in small communities and industrial sites in cold climate areas such as Canada, Siberia and deserts.



**Vanadium flow batteries** with their long useful lifetime of more than 30 years is ideally suited to take on the role of balancing peak power and at the same time provide flexibility in the grid system, which rivals conventional power generation at grid demand needs.

By 2025, many electricity grids will experience a massive increase in the power generation coming from renewable power sources. As the intermittence of those wind and solar assets increasingly requires a baseload power quality, “Long duration storage will be the choice for collocation and combination into dispatchable power to the grid during peak demand times”, states Stefan Schauss, CEO of **CellCube**.

## Technology

### Principle of flow battery technology

### CellCube Active Patents and Licenses

Category	Percentage
Stack design	25%
System layout	25%
Stack electrodes	10%
Electrolyte	15%
System operation	20%
Power electronics	5%

### Vanadium Flow Battery History

- 1948 - First Functional Concept
- 1964 - NASA Apollo Program
- 1980 - UNSW (AUS) First Test Sample
- 2012 - UNSW selects CellCube as “Best in Class”

## Energy Storage Technology Selection

### Different Technologies for Different Problems / Applications

- While Lithium-Ion batteries are most effectively for short-duration applications like 0.5 hours to 2 hours of energy supply
- Redox Flow batteries have their sweet spot in large-scale and multi-hour energy supply applications

	< 10 kW	100kW	1 MW	10 MW	100 MW	1GW
Seasonal					Hydro Power CAES Hydrogen	
Weeks						
Days			Vanadium Redox Flow Batteries NaS			
Hours						
Minutes	Lithium Ion, Lead Acid, Zinc-air					

In 2018, **CellCube** continued with the development of its vanadium redox flow battery storage systems business through its wholly-owned subsidiaries **Enerox** and **Enercube**. These efforts were focused on sales and marketing efforts for the Company's products and also manufacturing and product development. These businesses were acquired in April and May 2018 and the integration and implementation of value-added growth strategies continues to be **CellCube**'s primary focus.

On December 12, 2018, **CellCube** and **Regency Gold** entered into a letter of intent (LOI) to enter into a business combination. The transaction would spin out **V23 Resource Corp.** ("V23") which holds the **Bisoni McKay** and **Bisoni-Rio Vanadium projects** to Regency Gold.

On December 17, 2018, **CellCube** acquired all the outstanding common shares of **Pure Vanadium** in exchange for 4.2 million common shares valued at \$ 756,000 and the assumption of \$ 187,000 in debt. The Company acquired Pure's portfolio of licences for the production and sale of vanadium electrolyte for the development of formulations for grid-scale electrical storage business. **CellCube** also granted an 1.5% royalty on electrolyte sales revenues to the founder of the associated technologies.

### ► Achievements in 2019

On May 23, 2019, **CellCube** announced that the Company has won the very sought-after EES award, category Electrical Energy Storage at the Munich intersold/ees event. The award was given for the development of its **CellCube FB 500-2000**, the largest single module flow-battery based energy storage system.

On May 13, 2019, **Pangea Energy** and **CellCube**'s 100% subsidiary Enerox, Austria signed a Letter of Intent to build a 500 MW/200 MWe Energy Storage System on grid scale in Port Augusta, South Australia. In addition to multiple grid services, renewable baseload is offered to the Australian market, which goes hand-in-hand with a planned 50 MW solar project at the same site.

On February 8, 2019, **Regency Gold** entered into a definitive agreement to acquire **Vanadium North Resources**, followed by the announcement on May 7, 2019 that conditional approval for the acquisition had been received, which clears the way for **CellCube** and **Regency Gold** to progress towards finalizing terms and conducting the transaction with **CellCube**.

On May 3, 2019, **Regency Gold** reported that it will raise up to C\$ 2 million through the issuance of up to 8 million common shares of the Company at a price of C\$ 0.25 per share to fund the acquisition of the Bisoni-McKay and Bisoni-Rio Vanadium properties.

On January 31, 2019, **CellCube** announced a strategic partnership with **Immersa** located in Durslag, Gloucestershire, to deliver a large-scale vanadium redox batteries in the **UK market**. **Immersa** has developed and implemented large-scale utility projects throughout the UK and Europe. These high value complex projects require a multi-disciplinary approach utilizing in-house capabilities.

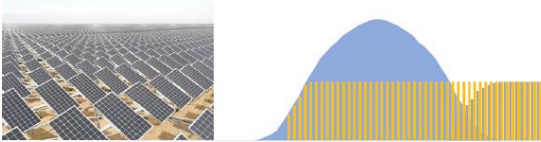

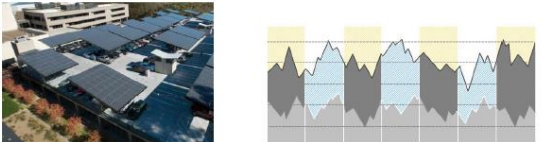


On January 22, 2019, **CellCube** announced energy storage sales to **Germany** and **Czech Republic** and has closed on the sale of another two modular energy storage systems ("**FB Modular**"). These sales have added more than 1 MWh of energy storage to CellCube's existing produced capacity for a total of 23.1 MWh.

The first sale is a **FB 200-800** stand-alone vanadium redox flow energy storage system with 200 kW AC power rating and close to 900 kWh usable energy capacity. The system is for a German public institution and has been installed in March.

The second sale is a **FB Modular series FB 30-130** which has been installed in April in the Czech Republic in an area near to the Polish border and is part of a micro grid for a solar supported farm operation and will overcome certain shortfalls in energy delivery during the year. **CellCube** worked with the project developer who installs local solar and small wind turbines in the area.

On January 7, 2019, **CellCube** announced the sale of a modular energy system ("**FB Modular**") to a French multi-national green energy developer for their internal technology proof of concept. The FB Modular will be deployed in the south of France near the city of Montpellier. The system will be collocated to a large-scale solar park and will provide multiple value streams for power delivery into the grid system. The Company will additionally perform application testing for grid scale support services like primary control and several grid balancing features.

# CellCube Target Applications

	How it Works	Market 2021*	Deals in Pipeline	Project Feasibility Returns
<b>Large Renewable Co-location</b> 		819M USD 2,475 MWh	16 2,997MWh	Today IRRs 7-18%
<b>Capacity &amp; Reserves</b> 		2,454M USD 7,048 MWh	22 1,850MWh	2020+ IRRs 7-22%
<b>DER &amp; Microgrid</b>		2,905M USD 8,600 MWh	22 1,160MWh	Today IRRs 5-25%

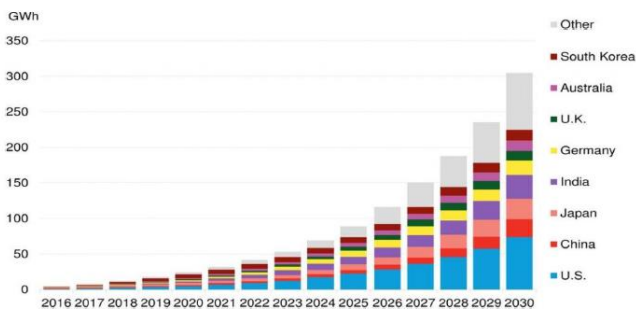
\*Navigant Long Duration ESS Report, 11/2018

# Market Opportunity and Energy Storage Demand

Leading Country Demand

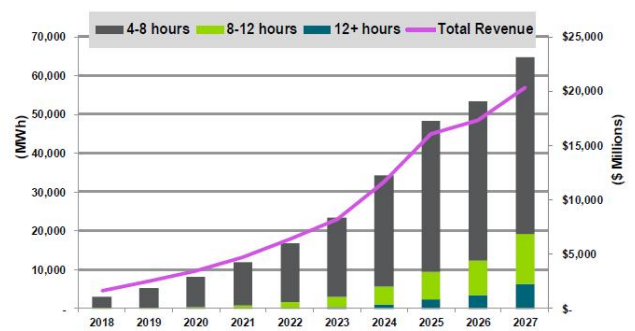
## Bloomberg New Energy Finance, 2017

Energy Storage Deployment 103bln USD Opportunity



## Navigant Research, 2018

Long Duration Energy Storage a 92bln USD Opportunity



## **Management**

**STEFAN SCHAUSS, CEO, Director**, has over 20 years of sales and business development experience worldwide with a focus in recent years on utility scale energy storage. He has extensive experience in marketing and sales of vanadium redox flow batteries (“VFBs”), the leading battery for large scale stationary energy storage. Stefan has worked in both Europe and North America. He has a MSc. Physics from University Mainz, Germany with a concentration in computer science and electronics.

**MICHAEL J. NOBREGA, Director, FCPA, FCA**, was President and CEO of the Ontario Municipal Employees Retirement System (OMERS), one of Canada’s largest pension funds with net assets in excess of \$95 billion. President and CEO of Borealis Infrastructure, a wholly-owned subsidiary of OMERS, from 1998-2007. Mr. Nobrega holds an Honours BA from the University of Toronto and a chartered accountancy designation from the Institutes of Chartered Accountants of Ontario and Canada. He is former tax partner of Arthur Andersen

**BRETT WHALEN, Chairman, Director, CFA**, was recently Vice President and Portfolio Manager at Goodman Investment Counsel, a wholly-owned division of Dundee Corporation. Brett is also President and CEO of the CMP Group of companies and Director of Enwise Holdings since 2007. His experience also includes senior positions with Dundee Capital Markets and Clarus Securities Inc. He has a BA (Honours) degree in Economics and Finance from Wilfred Laurier University.

**BRUNO ARNOLD, Director**, is an international financier and real estate developer with over 50 years of business experience. He was a founder and is currently Chairman of Euromart Group, one of the largest privately held real estate and investment advisory services companies in Canada. Mr. Arnold is originally from Switzerland and received a degree in Architecture from the Lucerne University of Applied Science.

**HENRIK MIKKELSEN, VP Corporate Finance, Director**, is the Managing Partner and CIO at Iridis AG in Zug, Switzerland, a Family and Investment Office offering advisory and asset development on all levels. He holds a Graduate Diploma in Investments and Finance and a Diploma in Strategic Management and Organization from Copenhagen Business University and a bachelor in Finance from Syddansk University. Mr. Mikkelsen has 10+ years in the energy business.

**HENK VAN ALPHEN, Director**, is currently CEO and a Director of Wealth Minerals Ltd., which is focused on minerals for the energy storage industry. Henk has had long career of high value M&A transactions and adding shareholder value. He has been directly involved in Pacific Rim Mining Corp., Corriente Resources, Cardero Resources, Trevali Mining, Balmoral Resources and International Tower Hill Mines. He is presently also a director of Blackrock Gold, Ethos Gold and Centenera Mining

**JOHN DYER, CFO, CPA, CMA**, has over 30 years of financial management experience including chief financial officer roles in both private and public companies, controller roles and public practice accounting. As a Chartered Professional Accountant, Mr. Dyer has wide ranging experience in various industries including manufacturing, construction, technology, non-profit, mining, financial institutions and insurance. He also has extensive knowledge in systems technology and software.

**ALEXANDER SCHOENFELDT, COO of Enerox**, possesses 20 years of experience in the Energy Sector. With his solution and business orientation, analytical skills and intercultural and communication competence Alexander is able to simplify big pictures into commercialized digestible must have products and solutions for the benefit of both stakeholders and shareholders. Being highly flexible Alexander has delivered strategic wins and outstanding results in large and small organizations across multiple business types from small consulting projects to large multi-million business process outsourcing contracts.

**BRIAN RICKER, CEO & President of EnerCube and PowerHaz**, brings over 30 years of business experience in the electrical industry, including 15 years in senior management roles. He recently left Eaton Corporation (a multi-national power management company) where he was responsible for managing domestic and international projects in the engineered equipment space.

## Finance

As at December 31, 2018, **CellCube** had a net working capital of C\$ 9.8 million and net assets of C\$ 19.9 million. During the 6 months ended December 31, 2018, the Company had cash outflows from operating activities of C\$ 3.95 million and had cash provided from financing activities of C\$ 4.2 million.

On March 18, 2019, **CellCube** announced the arrangement of a C\$ 10 million non-brokered financing with an over-allotment option of C\$ 5 million, principle amount secured convertible debenture. The debentures will mature on the third anniversary of the date of issuance and bear an interest rate of 9% per annum, which shall accrue and be paid semi-annually.

Each debenture shall, at the option of the holder, be convertible at a conversion price of C\$ 0.30 per share.

### Investment recommendation:

**CellCube's** mission is to be a fully integrated producer of **Vanadium, Vanadium electrolytes and Vanadium redox inflow batteries** for the **energy storage systems**.

Until recently, storage of electricity for a later date was largely limited to small electrical-chemical batteries, lead acid nickel-cadmium. Current consumer technology is dependent upon batteries for cell phones, laptop computers, electric cars.

Individually, these require relatively small amounts of energy storage. Now it is possible to start vast quantities of electricity that can be used at a later time.

As the leading supplier of **Vanadium Redox Flow Batteries**, **CellCube**, with a 3-year projection for a \$ 300 million energy storage business, is recognized as a world leading technology developer.

In addition, the Company is in the process to spin-out its high-quality vanadium assets, located in southwestern Northwest Territories into **V23 Resources**.

Based on its prospective outlook, at a market valuation of just \$ 16.3 million (US\$ 12.0 million), **CellCube**, in my view, offers a highly attractive investment opportunity in a strongly growing industry.

**My price target for 2019 is C\$ 0.20.**