COWEN

EQUITY RESEARCH

November 29, 2021

- Mobility Technology
- Sustainability
- Sustainability: Industrial Gas & Equipment

Jeffrey Osborne
646 562 1391
jeffrey.osborne@cowen.com

Marc Bianchi, CFA
646 562 1393
marc.bianchi@cowen.com

Thomas Boyes
646 562 1378
thomas.boyes@cowen.com

Jonathan Hunter, CFA
646 562 1407
jonathan.hunter@cowen.com

James Schumm
646 562 1439
james.schumm@cowen.com

Emily Riccio
646 562 1383
emily.riccio@cowen.com

Jeffrey Rossetti
646 562 1335
jeffrey.rossetti@cowen.com

Shah Imran, CFA
646 562 1322
shah.imran@cowen.com

INDUSTRY UPDATE

COWEN'S ENERGY TRANSITION SERIES - DISCUSSION WITH NEXT HYDROGEN SOLUTIONS

THE COWEN INSIGHT

As part of our Energy Transition Series, we hosted Raveel Afzaal, President and CEO, and Neil Webber, Director, IR of Next Hydrogen Solutions (TSXV:NXH; OTCQB:NXHSF). In this installment we discuss Next Hydrogen's electrolyzer technology and hydrogen market trends. The company is planning for volume commercial sales by 2023.

Company Background

Based in Canada, Next Hydrogen designs and manufacturers water electrolysis equipment separating hydrogen to be used for fuel cells among other applications. In June 2021, Next Hydrogen Solutions Inc. and Next Hydrogen Corporation completed a three-cornered amalgamation and received approval to list on the TSX Venture Exchange. Canada is a hydrogen solution leader given contributions from Ballard Power (global fuel cell company), Hydrogenics (acquired by Cummins and Air Liquide) and Stuart Energy (merged with Hydrogenics). Jim Hinatsu, Ph.D, COO, and Michael Stemp, Ph.D, CTO, led the R&D programs for Stuart Energy and then at Hydrogenics before co-founding Next Hydrogen in 2008. See the company's most recent presentation HERE. Note we take no view on the investment merits in the company; however, find the approach to green hydrogen cost reduction plans as intriguing.

Solution Focused on Integration of Renewable Energy Resources

Next Hydrogen's technology has been under development for over 14 years with a goal of reducing capex given electrolyzers will not be operating at full utilization if connected to a renewable asset rather than the grid. An electrolyzer connected to an intermittent renewable energy resource results in utilization well below 100% - typically 25-60% in our view. As the capacity factor continues to come down, the capex becomes more meaningful than the opex when assessing the levelized cost of hydrogen (LCOH). The company has developed a unique cell design architecture which allows for better integration with renewable energy resources. We note conventional alkaline electrolyzer technologies have historically been built for predictability and not designed for intermittent renewable energy.

Three Unique Features of Next Hydrogen's Electrolyzers

A key challenge for alkaline electrolyzers is fluid and gas management forcing low densities. Next Hydrogen's patented cellular architecture removes fluid-gas flow restrictions which limit traditional electrolyzer performance by separating fluids and gases on top of the cell plate, rather than externalized separation, resulting in high current density, better dynamic response, and scalable design reducing capex for systems. The company's systems can take municipal water with reverse osmosis water treatment conducted inside the system.

The company is designing low capex electrolyzers for better integration with renewable energy resources (i.e. the lowest levelized cost of hydrogen) through three unique features for its electrolyzers. First, the company increased alkaline density to 1.0 A/cm^2 from 0.4 A/cm^2 as density is inversely correlated with materials required to manufacture an electrolyzer unit. As a result, the company's design enables ~2.5x higher current density than peers, leading to 2.5x more hydrogen produced for the same amount of raw materials. Secondly, the system's responsiveness was improved to better capture the renewable energy resources. Thirdly, a design that can be scaled to 100MW is being developed to drive down costs.

The technology is cell agnostic supported by 38 patents covering multiple alkaline and polymer electrolyte membrane (PEM) product roll-outs. Next Hydrogen started with alkaline as it is more mature and commercially available which allowed to company to prove its cell design architecture. The company also prefers alkaline as it uses base metals vs more costly metals such as platinum used in PEM. We note alkaline is being used at the NEOM facility in Saudi Arabia leveraging thyssenkrupp technology. Management views solid state as a promising technology and has spoken with some anion exchange membrane (AEM)companies regarding deploying AEM cells in its system. The issue with AEM now is low stabilization with a few more years required for the technology to become mature. Management also acknowledged a great deal of work is being done in the solid oxide market for electrolyzers, which Bloom is entering.

Validated Electrolyzer Design

The company's first pilot project to demonstrate the design was with Atomic Energy of Canada Limited (AECL), Canada's largest nuclear science and technology laboratory. AECL validated the design architecture though the CANDU(Canada Deuterium Uranium)market was determined to be too small. (We note the CANDU is a Canadian pressurized heavy-waterreactordesign used to generate electric power.)

On the distribution center market, Next Hydrogen was awarded a testing evaluation project with Canadian Tire, a retailer which has ~300 fueling stations in Canada. The 0.4MW project with Canadian Tire ran from 2014-2019 used to test purchased fork lifts which resulted in an order for two NH-300 systems (both ~1.8MW) for total hydrogen production capacity of 1.5 metric tons per day. The company's go-to-market strategy is partnering with compressor storage companies and sees first adoption through distribution centers followed by designated captive stations for hydrogen fleets and finally gas stations. Mr. Afzaal sees room for dedicated hydrogen systems at gas stations as well as the hub and spoke model (electrolyzer tied to renewable energy farms and then transporting hydrogen in gaseous form). Next Hydrogen model is intended for the hub and spoke model. On the mobility side, Next Hydrogen has partnered with Hyundai and Kia and is seeking one more partner.

Targets for Moving Toward Commercialization

The company is attempting to scale to 9MW from 2MW currently with a target cost of $400/KW by 2025, down from ~$1,200/KW in terms of system capex. The system cost includes the full system (electrolyzer stack and balance of plant). Lower cost is targeted through 1) sale improvements, 2) rationalized parts for balance of plant and electrolyzer module, 3) economies of scale (moving to 9MW from 2MW). The company is currently attempting to scale its technology to deliver both systems to Canadian Tire in 2022 and targeting large volume commercial sales by 2023.

Next Hydrogen Thoughts on Competition from China

Mr. Afzaal noted largely Gen 1 systems in China (which has steel plates and asbestos). There are also Gen 2 systems (no asbestos and steel plates). With Gen 3 (plastic plates) coming soon out of China. Next Hydrogen offers Gen 4 (plastic plates with internal gas liquid separation) which is not offered by any competitors in their view and management sees a strong opportunity to bring the technology to market in China via partnerships. Next Hydrogen is getting exposure to the Chinese market through an investment from a Shandong state owned fund, an area that Ballard is also quite active in. For more on cost profiles of differing plate technologies see NREL studies HERE and HERE.

Potential PTC Viewed as Significant Tailwind for Achieving Cost Parity

Build Back Better includes a potential production tax credit (PTC) that would pay for the production of 'clean hydrogen' at a rate determined by a discount likely set against a $3.00/kg baseline. Next Hydrogen sees the cost of green hydrogen is $8/kg if producing at $1mn capex and $0.08/kWh electricity compared to cost of diesel at $2/kg. The $3/kg PTC brings the cost down to $5/kg though the cost of energy is trending down from $0.08/kWh with many wind and solar PPAs now being done in the $0.02-$0.04/kWh range, thus increasing the competitiveness of hydrogen.

Ticker	Rating	Price*	Price Target
BLDP	Market Perform	$15.33	$15.00
PLUG	Outperform	$41.62	$44.00
FCEL	Market Perform	$8.92	$7.00
APD	Outperform	$291.35	$370.00
GTLS	Outperform	$177.67	$188.00
BE	Market Perform	$27.42	$29.00
NKLA	Outperform	$10.23	$25.00
AI FP	Outperform	€147.36	€195.00
LIN	Market Perform	$320.74	$330.00

*As of 11/29/2021

VALUATION METHODOLOGY AND RISKS

Valuation Methodology

Industrial Gas & Equipment:

We derive a year end price target using a discounted cash flow model with the discount rate equal to the weighted average cost of capital (WACC). We derive our WACCs from our estimates of the risk free rate, market risk premium, the company's unlevered beta, the cost of incremental borrowing, and market values of debt and equity. Our terminal value assumes growth equivalent to the risk free rate.

We make investment recommendations on certain early stage, pre-revenue companies based upon an assessment of their business model, technology, probability of market success, and the potential market opportunity, balanced by an assessment of applicable risks. Such companies may not be assigned a price target.

Mobility Technology:

Our primary inputs to valuation are earnings and earnings growth (P/E and PEG) for the next two years. In cases where GAAP net income includes large, non-cash items (e.g., SBC or intangible amortization), we may use non-GAAP EPS. For companies with an emerging business model, we may use future-year earnings discounted back. As a cross check to an earnings multiple, we may also use a DCF analysis. For situations where earnings are not visible within our forecast horizon, we may use asset values (P/Book, P/TBV).

We make investment recommendations on certain early stage, pre-revenue companies based upon an assessment of their business model, technology, probability of market success, and the potential market opportunity, balanced by an assessment of applicable risks. Such companies may not be assigned a price target.

Sustainability:

Our primary inputs to valuation are earnings and earnings growth (P/E and PEG) for the next two years. In cases where GAAP net income includes large, non-cash items (e.g., SBC or intangible amortization), we may use non-GAAP EPS. For companies with an emerging business model, we may use future-year earnings discounted back. As a cross check to an earnings multiple, we may also use a DCF analysis. For situations where earnings are not visible within our forecast horizon, we may use asset values (P/Book, P/TBV).

We make investment recommendations on certain early stage, pre-revenue companies based upon an assessment of their business model, technology, probability of market success, and the potential market opportunity, balanced by an assessment of applicable risks. Such companies may not be assigned a price target.

Investment Risks

Industrial Gas & Equipment:

Industrial Gases are globally diversified businesses with end markets across Chemicals & Refining, Metals, Manufacturing, Healthcare and Electronics. A large portion of the business is supported by long term contract with pass through of volatile energy costs, however changes in broader economic activity and these specific end markets could impact the transactional business and expectations for future capital deployment and growth. The Chemicals & Refining and Metals end markets could face longer term risk from a migration away from carbon emitting fuels, materials and products. Industrial gases are viewed as enablers of Energy Transition, particularly through green hydrogen and carbon capture where near term growth in some cases is dependent on government support, and could become uncertain.

Mobility Technology:

Demand for Mobility Technology is largely a function of global automotive and truck production. A slowdown in sales would lead to lower demand by OEMs for content from suppliers. The pace of adoption for connected vehicle, autonomous systems, vehicle electrification, and safety may be strongly influenced by government regulations, subsidies, and mandates. Share prices and financial results may be sensitive to policy changes and outcomes may be difficult to predict, due to the political nature of the process.

Sustainability:

Demand for Sustainable Technology may be strongly influenced by government regulations, subsidies, and mandates as well as the overall health of the global macro economy. Share prices and financial results may be sensitive to policy changes and outcomes may be difficult to predict, due to the political nature of the process.

ADDENDUM

Analyst Certification

Each author of this research report hereby certifies that (i) the views expressed in the research report accurately reflect his or her personal views about any and all of the subject securities or issuers, and (ii) no part of his or her compensation was, is, or will be related, directly or indirectly, to the specific recommendations or views expressed in this report.

Important Disclosures

This report constitutes a compendium report (covers six or more subject companies). As such, Cowen and Company, LLC chooses to provide specific disclosures for the companies mentioned by reference. To access current disclosures for the all companies in this report, clients should refer to https://cowen.bluematrix.com/sellside/Disclosures.action or contact your Cowen and Company, LLC representative for additional information.

Cowen and Company, LLC compensates research analysts for activities and services intended to benefit the firm's investor clients. Individual compensation determinations for research analysts, including the author(s) of this report, are based on a variety of factors, including the overall profitability of the firm and the total revenue derived from all sources, including revenues from investment banking, sales and trading or principal trading revenues. Cowen and Company, LLC does not compensate research analysts based on specific investment banking transactions or specific sales and trading or principal trading revenues.

Disclaimer

Our research reports are simultaneously available to all clients are on our client website. Research reports are for our clients only. Not all research reports are disseminated, e-mailed or made available to third-party aggregators. Cowen and Company, LLC is not responsible for the redistribution of research by third party aggregators. Selected research reports are available in printed form in addition to an electronic form. All published research reports can be obtained on the firm's client website, https://cowenlibrary.bluematrix.com/client/library.jsp.

The information, opinions, estimates and forecasts are as of the date of this report and subject to change without prior notification. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Research reports are published at irregular intervals as appropriate in the analyst's judgement.

Further information on subject securities may be obtained from our offices. This research report is published solely for information purposes, and is not to be construed as an offer to sell or the solicitation of an offer to buy any security in any state where such an offer or solicitation would be illegal. Other than disclosures relating to Cowen and Company, LLC, the information herein is based on sources we believe to be reliable but is not guaranteed by us and does not purport to be a complete statement or summary of the available data. Any opinions expressed herein are statements of our judgment on this date and are subject to change without notice. The opinions and recommendations herein do not take into account individual client circumstances, objectives or needs and are not intended as recommendations of investment strategy. The recipients of this report must make their own independent decisions regarding any securities subject to this research report. In some cases, securities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. To the extent that this report discusses any legal proceedings or issues, it has not been prepared to express or intended to express any legal conclusion, opinion or advice. Our salespeople, traders and other professionals may provide oral or written market commentary or trading strategies to our clients that reflect opinions that are contrary to the opinions expressed in our research. Our principal trading area and investing businesses may make investment decisions that are inconsistent with recommendations or views expressed in our research. Cowen and Company, LLC maintains physical, electronic and procedural information barriers to address the flow of information between and among departments within Cowen and Company, LLC in order to prevent and avoid conflicts of interest with respect to analyst recommendations.

For important disclosures regarding the companies that are the subject of this research report, please contact Compliance Department, Cowen and Company, LLC, 599 Lexington Avenue, 20th Floor, New York, NY 10022. In addition, the same important disclosures, with the exception of the valuation methods and risks, are available on the Firm's disclosure website at https://cowen.bluematrix.com/sellside/Disclosures.action.

Equity Research Price Targets: Cowen and Company, LLC assigns price targets on all companies covered in equity research unless noted otherwise. The equity research price target for an issuer's stock represents the value that the analyst reasonably expects the stock to reach over a performance period of twelve months. Any price targets in equity securities in this report should be considered in the context of all prior published Cowen and Company, LLC equity research reports (including the disclosures in any such equity report or on the Firm's disclosure website), which may or may not include equity research price targets, as well as developments relating to the issuer, its industry and the financial markets. For equity research price target valuation methodology and risks associated with the achievement of any given equity research price target, please see the analyst's equity research report publishing such targets.

Cowen Cross-Asset Research: Due to the nature of the fixed income market, the issuers or debt securities of the issuers discussed in "Cowen Cross-Asset Research" reports do not assign ratings and price targets and may not be continuously followed. Accordingly, investors must regard such branded reports as providing stand-alone analysis and reflecting the analyst's opinion as of the date of the report and should not expect continuing analysis or additional reports relating to such issuers or debt securities of the issuers.

From time to time "Cowen Cross-Asset Research" analysts provide investment recommendations on securities that are the subject of this report. These recommendations are intended only as of the time and date of publication and only within the parameters specified in each individual report. "Cowen Cross-Asset Research" investment recommendations are made strictly on a case-by-case basis, and no recommendation is provided as part of an overarching rating system or other set of consistently applied benchmarks. The views expressed in "Cross-Asset Research" report may differ from the views offered in the firm's equity research reports prepared for our clients.

Notice to UK Investors: This publication is produced by Cowen and Company, LLC which is regulated in the United States by FINRA. It is to be communicated only to persons of a kind described in Articles 19 and 49 of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005. It must not be further transmitted to any other person without our consent.

Notice to European Union Investors: Individuals producing recommendations are required to obtain certain licenses by the Financial Regulatory Authority (FINRA). You can review the author's current licensing status and history, employment history and, if any, reported regulatory, customer dispute, criminal and other matters via "Brokercheck by FINRA" at http://brokercheck.finra.org/. An individual's licensing status with FINRA should not be construed as an endorsement by FINRA. General biographical information is also available for each Research Analyst at www.cowen.com.

Additionally, the complete preceding 12-month recommendations history related to recommendation in this research report is available at https://cowen.bluematrix.com/sellside/Disclosures.action

The recommendation contained in this report was produced at November 29, 2021, 22:13 ET. and disseminated at November 29, 2021, 22:13 ET.

Copyright, User Agreement and other general information related to this report

Cowen and Company, LLC. New York 646 562 1010 **Boston** 617 946 3700 **San Francisco** 415 646 7200 **Chicago** 312 577 2240 **Cleveland** 440 331 3531 **Atlanta** 866 544 7009 **Stamford** 646 616 3000 **Washington, D.C.** 202 868 5300 **London** (affiliate) 44 207 071 7500

COWEN AND COMPANY EQUITY RESEARCH RATING DEFINITIONS

Outperform (1): The stock is expected to achieve a total positive return of at least 15% over the next 12 months

Market Perform (2): The stock is expected to have a total return that falls between the parameters of an Outperform and Underperform over the next 12 months

Underperform (3): Stock is expected to achieve a total negative return of at least 10% over the next 12 months

Assumption: The expected total return calculation includes anticipated dividend yield

Cowen and Company Equity Research Rating Distribution

Distribution of Ratings/Investment Banking Services (IB) as of 09/30/21

Rating	Count	Ratings Distribution	Count	IB Services/Past 12 Months
Buy (a)	661	71.93%	205	31.01%
Hold (b)	249	27.09%	29	11.65%
Sell (c)	9	0.98%	0	0.00%

(a) Corresponds to "Outperform" rated stocks as defined in Cowen and Company, LLC's equity research rating definitions. (b) Corresponds to "Market Perform" as defined in Cowen and Company, LLC's equity research ratings definitions. (c) Corresponds to "Underperform" as defined in Cowen and Company, LLC's equity research ratings definitions. Cowen and Company Equity Research Rating Distribution Table does not include any company for which the equity research rating is currently suspended or any debt security followed by Cowen Credit Research and Trading.

Note: "Buy", "Hold" and "Sell" are not terms that Cowen and Company, LLC uses in its ratings system and should not be construed as investment options. Rather, these ratings terms are used illustratively to comply with FINRA regulation.

POINTS OF CONTACT

Analyst Profiles

Jeffrey Osborne
Stamford
646 562 1391
jeffrey.osborne@cowen.com

Jeff Osborne covers sustainability and mobility technology. He has a BS from Trinity University and an MBA from Wayne State University.

Marc Bianchi, CFA
New York
646 562 1393
marc.bianchi@cowen.com

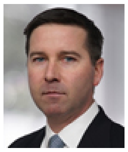
Marc Bianchi is an analyst covering oilfield services. He joined Cowen in May 2013, and has worked at Turner Investments.

Thomas Boyes
New York
646 562 1378
thomas.boyes@cowen.com

Thomas Boyes is on the sustainability team covering bioproduct and environmental services. He has a BS in finance from Saint Joseph's University.

Jonathan Hunter, CFA
New York
646 562 1407
jonathan.hunter@cowen.com

Jonathan Hunter covers the oilfield services sector. He joined Cowen in March 2013 through the merger with Dahlman Rose.

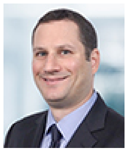


James Schumm
New York
646 562 1439
james.schumm@cowen.com

James Schumm covers the oilfield services sector. He joined Cowen in April 2018 from Guggenheim Partners.

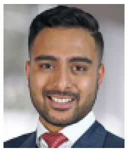
Emily Riccio
New York
646 562 1383
emily.riccio@cowen.com

Emily Riccio is an associate covering sustainable energy technology. She received a BA in economics from Trinity College.



Jeffrey Rossetti
New York
646 562 1335
jeffrey.rossetti@cowen.com

Jeff Rossetti is an associate covering sustainable energy technology. He joined Cowen in December 2014.



Shah Imran, CFA
New York
646 562 1322
shah.imran@cowen.com

Shah Imran is an associate covering sustainable energy technology. He has an MSc in economics from Texas A&M University.

Reaching Cowen

Main U.S. Locations

New York
599 Lexington Avenue
New York, NY 10022
646 562 1010
800 221 5616

Boston
Two International Place
Boston, MA 02110
617 946 3700
800 343 7068

Cleveland
20006 Detroit Road
Suite 100
Rocky River, OH 44116
440 331 3531

San Francisco
One Maritime Plaza, 9th Floor
San Francisco, CA 94111
415 646 7200
800 858 9316

Atlanta
3424 Peachtree Road NE
Suite 2200
Atlanta, GA 30326
866 544 7009

Chicago
181 West Madison Street
Suite 3135
Chicago, IL 60602
312 577 2240

Stamford
262 Harbor Drive
Stamford, CT 06902
646 616 3000

Washington, D.C.
2900 K Street, NW
Suite 520
Washington, DC 20007
202 868 5300

International Location

Cowen International Limited

London
1 Snowden Street - 11th Floor
London EC2A 2DQ
United Kingdom
44 20 7071 7500