



**January 5, 2018**

**CURRENT PRICE:** \$5.74  
**RATING:** BUY  
**PRICE TARGET:** \$10  
**CURRENT YIELD:** N/A

**EPS Estimates - GAAP**

	DEC 16A	DEC 17E
1Q	(\$0.22)	(\$0.32)A
2Q	\$0.07	(\$0.28)A
3Q	(\$0.21)	(\$0.37)A
4Q	(\$0.38)	(\$0.31)
	<b>(\$0.74)</b>	<b>(\$1.28)</b>

**Trading Data**

52-WEEK PRICE RANGE: \$6.61-\$4.29  
 SHARES OUTSTANDING: 37.0(M)  
 MARKET CAP: \$212.3(M)  
 AVG. DAILY TRADING VOLUME: 0.3(M)  
 S&P 500: 2,742

**Valuation Data**

BOOK VALUE: \$2.92  
 PRICE TO BOOK: 1.96x  
 DIVIDEND: n/a

**MAXWELL TECHNOLOGIES, Inc. (NSDQ: MXWL)**

*Turnaround starting 4Q18 or 2019?*

**Highlights**

- 3Q17 GAAP earnings of (\$0.37)/share vs.(\$0.21)/share
- Management sees potential future revenue/earnings growth
- Issued private \$50 million of convertible senior notes
- “Pipeline Opportunities” in auto, grid, & wind sectors
- Maintain BUY rating & \$10/share price target

**Investment Thesis**

The recent sell-off in this stock has created an attractive entry point for speculative/aggressive investors seeking above average appreciation potential, from MXWL’s shares during the next 6-18 months. We believe MXWL is a revenue/earnings growth story, based on rising demand for the company’s products on both a short-term and long-term basis. Specifically, increased demand for the company’s ultracapacitor products could drive earnings growth as auto/truck/rail industries move towards “greener” options to increase mileage and lower vehicle emissions.

**Company Summary**

Maxwell Technologies (MXWL-\$5.74), headquartered in San Diego CA, develops, manufactures, and markets advanced energy storage/power delivery products. These products are used in the transportation, renewable energy, industrial, information technology sectors and the company also offers microelectronic products for space/satellite applications. MXWL’s produces two primary items; ultracapacitors and high-voltage capacitors. Internal manufacturing is done at facilities in Phoenix AZ and Rossens Switzerland. Low-cost offshore assembling of MXWL’s ultracapacitor products is done by Belton Technology (Hong Kong China) and Lishan Battery Company (Tianjin China). Sales offices are located in San Diego CA, Norfolk UK, Rossens Switzerland, Munich Germany, and Shanghai China.

*For Important Disclosure information regarding the Firm’s rating system, valuation methods and potential conflicts of interest, please refer to the last two pages of this report.*

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## BUSINESS OVERVIEW

MXWL has two primary products: Ultracapacitors and High-Voltage Capacitors.

Ultracapacitors (UC) are energy storage devices which possess high power density (having the ability to charge/discharge energy at a fast rate) and a long operational life. MXWL's ultracapacitor cells and multi-cell packs/modules supply high energy storage/power delivery solutions for application in many industries. These products are used in the transportation, energy, consumer, industrial electronics, and information technology industries. Ultracapacitors are the "lion's share" of MXWL's business comprising 62% of 2011's sales.

High-Voltage Capacitors (HVC) are devices designed/manufactured to perform reliably in all types of climates for electric utility infrastructures for long periods of time. This product group includes grading/coupling capacitors and capacitive voltage dividers used for safety, and reliability, in electric utility infrastructures. Other applications for this product group are used in the transmission, distribution, and measurement of high-voltage electrical energy.

In 2016 MXWL sold its Radiation-Hardened Microelectronic Products business to Data Device Corporation for approximately \$21 million in cash. MXWL recognized a pre-tax gain of \$6.66 million.

MXWL recently announced it was buying Nesscap Energy Business, a producer of small sized ultracapacitors, for \$23.75 million, with newly issued stock. Management believes Nesscap's products will compliment MXWL's larger-sized ultracapacitors.

## MXWL TRANSITIONING SALES/GROWTH EFFORTS

During the past 3 years there has been a change in MXWL's management team and sales strategy with the objective of diversifying its targets markets and grow revenues. CEO, Dr. Franz Fink joined the company in May 2014 and hired a new CFO, David Lyle, and employed new people for key/strategic positions. Dr. Henning Hauenstein became MXWL's Vice President of Strategy/Marketing after working at Infineon Technologies for 10 years as Senior Vice President /General Manager of the automotive business segment.

MXWL's new management group saw the need to shift MXWL away from the Chinese government subsidy-dependent hybrid bus business and diversify into other sectors moving towards mandated energy efficient standards set for 2020. These other sectors include electric/utility grid systems, wind generation, railroad systems, automotive, and truck sectors. To this end, plans are to work with existing customers and establish new strategic partnerships to assist funding of key technologies/ solutions to accelerate the broader commercialization of MXWL's products. For example, agreements have been signed with Corning (GLW-\$33.64) to develop/market MXWL's, and with Duke Energy (DUK-\$81.94) and US and foreign railroad systems to employ products in their electrical grid systems.



In another example, two of the three US truck OEMs, Kenillworth and Peterbilt, now offer MXWL's products and expectations are the third, now in the fifth season of testing, may also offer the same sometime during the next 12 months.

MXWL completed its 2017 purchase Nesscap Energy Business for \$23.75 million. The acquisition was paid for with newly issued shares of MXWL stock. Nesscap produces smaller sized ultracapacitor products and could compliment MXWL's larger ultracapacitor products

Management announced it was expanding the partnership with China Railway Rolling Stock Corporation (CRRC). The expansion will localize manufacturing of MXWL's ultracapacitor-based modules for use in the China green energy bus market during 2H17. CRRC will exclusively use MXWL's 2.7-volt and 3-volt ultracapacitor cells in local production lines and manufacture the products

MXWL unveiled a new Generator Starting Solutions (GSS) product line geared to start commercial/industrial standby/backup generators.

Another area MXWL sees as a potential new avenue of revenues is in the dry electrode battery technology area. Management's objective is to partner with automotive and energy storage industry leaders. Hopes are this area could "unlock new application forms" in this area for MXWL products and generate a new revenue stream beginning in 2022.

## RECENT EARNINGS

MXWL reported 3Q17 GAAP earnings of (\$0.37)/share vs. (\$0.21)/share during 3Q16. The decrease in results came from lower gross margins and higher total operating expenses. Gross margins declined to 20.6% from 29.9% due to increased UC sales (with lower margins) and softer high-voltage sales. Operating expenses rose to \$20.7 million from \$13.6 million because of higher SG&A (\$14.5 million vs. \$8.4 million), restructuring costs (\$1.3 million vs. \$0), and was partly offset by lower R&D (\$4.9 million vs. \$5.0 million) and asset impairment charges (\$0 vs. \$155,000).

The operating loss rose to -\$13.3 million from -\$5.9 million and EBIT increased to -\$13.3 million from -\$6.0 million. Interest expense rose to \$152,000 from \$48,000 following MXWL's issuance of convertible debt. Non-GAAP earnings per share improved to (\$0.13)/share from (\$0.18)/share when comparing 3Q17 vs. 3Q16.



## RECENT DEVELOPMENTS

Dr. Franz Fink, MXWL's CEO, purchased 230,000 shares of MXWL for approximately \$1.1 million.

MXWL announced a private offering/financing agreement. A \$50 million offering of convertible senior notes were sold to private investors. This replaced the financing agreement made earlier in the year with SDIC Fund Management. Also, MXWL entered into an agreement with Viex Capital Advisors, paying them \$600,000 after the private debt offering.

## MEETING WITH MANAGEMENT

We recently met with MXWL management to discuss the company's operating strategy to grow revenue and potential profitability either in late 2018 or 2019. Following dismal operating results during the past couple of years, as anticipated Chinese bus business opportunities failed to materialize, MXWL shifted its focus to strive towards a turnaround in late 2018.

MXWL believes this turnaround may come from the auto and electrical grid market opportunities, as well as "pipeline opportunities". The three primary drivers will be 1) renewable power generation, 2) vehicle electrification, and 3) changes in the electric battery market.

The company is currently highly dependent on high voltage revenues. To counter this, management recognizes the need to grow its product portfolio, extend market penetration of its ultracapacitors, and potentially bring its dry battery electrode product to the battery market.

MXWL is finishing the "proof-of-concept" process for its dry battery electrode product. Management estimates this product could either allow up to 20% more per battery charge, or allow battery producers to decrease the size of auto batteries but maintain the current amount of charging power. Partners are currently testing the product and potentially, assuming no problems, could finish the process during 1Q18. If this product enters the battery market, between 2021-2022, MXWL believes revenues will be produced from royalty agreements as it is introduced into the hybrid auto markets, either by an OEM or a large sales supplier.

The wind turbine markets could add \$50 million - \$80 million in revenues over the next few years. Over the short run, management believes ~\$10 million in additional wind revenues could materialize as wind farm maintenance contracts will be expiring and could move towards MXWL's ultracapacitors to replace them during the next 1 ½ -2 ½ years. Thus, there may be some increase in wind revenues in 2018 and more could materialize in 2019-2020.

Another potential area for revenue growth is the electric grid business as grid owners seek to save more energy generated and decrease down time for these systems. There are two pieces to this sector-global OEMs dealing with transmission lines and at the distribution level (i.e., micro grid). In the transmission line business, MXWL may



make a positive announcement in this area on the presumption a global OEM will use MXWL products in one of its systems in 2018. This could be beneficial to revenues if the OEM leverages the use of MXWL's products in other grids during the next 2-5 years.

The energy storage area offers another, but smaller, revenue opportunity as MXWL's products could be used in energy storage devices. For example, a manufacturing center could need electric storage capabilities, to handle its own supply needs, when electricity is hard to come by, during peak demand times for the local utility. Potentially, MXWL's UCs could be used in these energy storage systems and would be offered by its larger partner, which is selling these items to electrical grid operators/owners. MXWL believes revenues from "micro grid" orders could materialize in 2019-2020.

An interesting quote from CEO Dr. Franz Fink during our meeting was his statement that for years MXWL had been chasing industries to use its products. Now however, given new energy conservation regulation taking effect in 2020, Dr. Fink believes the industry will now be coming to MXWL for its products. If he is correct, MXWL could see a significant ramp of revenues, and earnings, during the next 2-3 years and the stock could experience a large increase in investor demand for its stock.

## Our Thoughts

The slow transformative process continues at MXWL as management moves away from its dependence on the Chinese bus business towards areas geared to produce revenue growth during the next 1-3 years. The company believes it is positioning itself for a turnaround based on automotive, wind turbine and electric grid opportunities, (renewable power generation), vehicle electrification, and with its dry electrode battery technology.

The stock has moved in fits and starts during the past few months, based on the hopes of growing revenues in 2018-2020. This trend should continue until revenue growth materializes in the future. While "waiting is a virtue", patient investors may be rewarded handsomely with share price appreciation if: a) revenue growth materializes, or b) MXWL's dry electrode battery technology is embraced and employed by a major OEM in the automotive battery sector. This stock is recommended for aggressive/speculative investors seeking appreciation in the alternative energy. Our price target is \$10/share, equating to MXWL trading at 7.0x our Enterprise Value/Revenues multiple based on our 2017 revenue estimate.



## Risks

There are no guarantees MXWL will be able to grow future earnings. Declining customer orders, increasing commodity prices, and rising operating costs could negatively affect the company's profits. Economic slowdowns, or political change, in Europe and Asia could have adverse effects on earnings. Given the majority of its revenues come from overseas, fluctuations in currency values could impact MXWL's profitability. New products from competitors, or changing industry trends, are risks for MXWL's ability to sell its products. Negative equity markets, rising interest rates, terrorist attacks, and failure to comply with the Sarbanes Oxley Act could cause a decline in MXWL's share price. Given the relatively small amount of daily trading activity in MXWL's stock, any increase in trading volume could significantly accelerate the volatility of its share price movement.

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# EQUITY RESEARCH

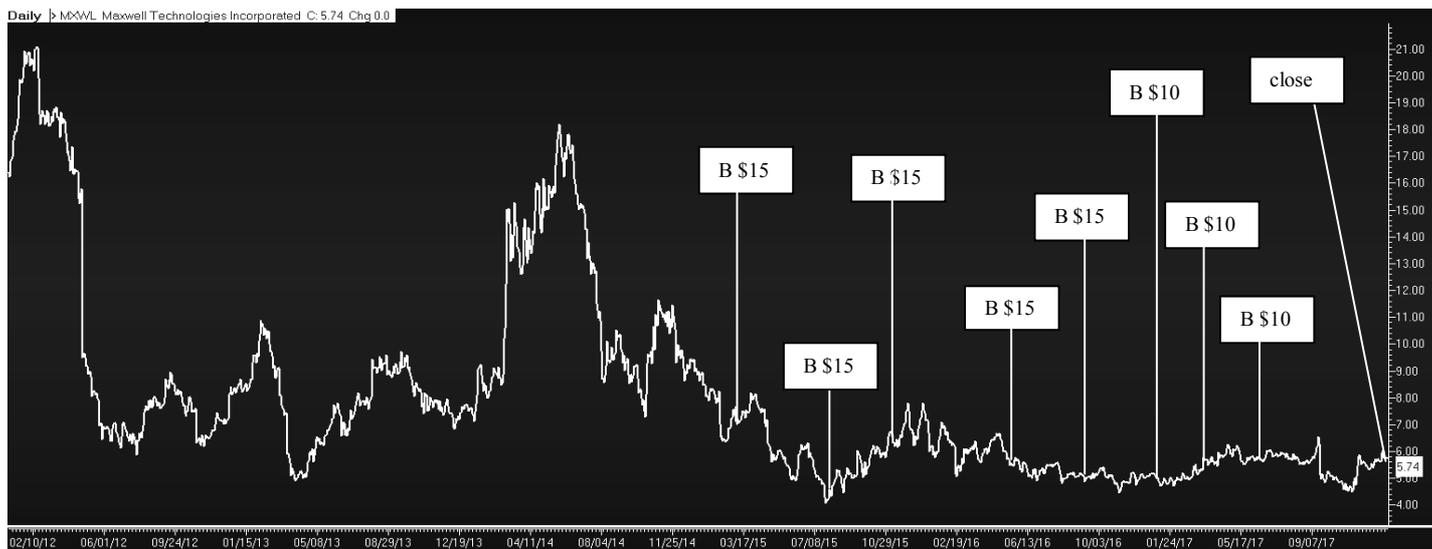
MAXWELL TECHNOLOGIES, INC. & SUBSIDIARIES  
condensed consolidated statements of operations  
(in thousands, except per share data - unaudited)

	1Q16	2Q16	3Q16	4Q16	2016	1Q17	2Q17	3Q17	4Q17e	2017e
Revenue	\$35,203	\$34,135	\$25,506	\$26,400	\$121,244	\$26,686	\$37,103	\$35,816	\$ 32,568	\$ 132,173
Cost of revenue	25,550	24,154	17,878	20,692	88,274	20,049	29,276	28,420	24,100	101,845
Gross profit	9,653	9,981	7,628	5,708	\$ 32,970	6,191	7,827	7,396	8,468	29,882
Operating expenses:										
Selling, general, & administrative	10,098	8,223	8,374	9,586	36,281	9,540	12,070	14,514	14,625	50,749
Research & development	5,607	5,461	5,193	4,783	20,889	7,686	4,430	4,891	4,673	21,680
Amortization of intangibles										
Restructuring/exit costs	188	109			297	997		1,251		2,248
Asset Impairment charges			155	1,234	1,389					
Total operating expenses	15,893	13,793	13,567	15,603	58,856	15,223	16,500	20,656	19,298	71,677
Income/(loss) from operations	-6,240	-3,812	-5,939	-9,895	-25,886	-9,032	-8,673	-13,260	-10,833	-41,798
Gain on asset sale		6,657			6,657					
Interest expense, net	65	66	48	69	248	63	97	152	154	466
Other Income	84	47	5	3	133	1	52	14	34	101
Amort of debt discount/prepaid debt costs										
Debt discount amort/prepaid debt costs										
For. Currency loss, gain	130	64	49	36	216	97	19	65	32	213
Income before income taxes	-6,365	2,767	-6,031	-9,931	-19,560	-9,191	-8,736	-13,333	-10,989	-42,249
Income taxes	483	600	824	2,238	4,145	1,208	1,382	527	529	3,646
Net income	(\$6,848)	\$2,167	(\$6,855)	(\$12,169)	(\$23,705)	(\$10,399)	(\$10,118)	(\$13,860)	(\$11,518)	(\$45,895)
Net income per share (diluted)	(\$0.22)	\$0.07	(\$0.21)	(\$0.38)	(\$0.74)	(\$0.32)	(\$0.28)	(\$0.37)	(\$0.31)	(\$1.28)
Shares outstanding (diluted)	31,650	32,027	31,989	31,995	31,870	32,200	35,526	37,008	37,008	37,008



# EQUITY RESEARCH

## Important Disclosures



5/1/12 \$9.58 initiate BUY & \$13 price target  
 4/2/13 \$4.98 lower to HOLD  
 9/9/13 \$9.12 raise to BUY & \$13 price target  
 4/8/14 Raise price target to \$15  
 1/5/17 Lower price target to \$10  
 Ratings-  
 BUY: B  
 HOLD: H  
 SELL: S

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Our price target is \$10/share, equating to 7.0x our Enterprise Value/Revenue multiple based on our 2017 revenue estimate

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