

Solar Energy

INDUSTRY SUMMARY

COGENT VALUATION identified **Solar Energy** publicly traded companies, IPOs, and recent M&A transactions within the Solar Energy industry, which provides a basis for market and transaction pricing that can be used by your firm in estimating market sentiment and its impact on your firm's value. Over the last year since December 31, 2017, the median 52-week share price return of the Solar Energy industry was -26.0%. Between December 31, 2016 and December 31, 2018, the median EV/EBITDA multiple increased from 7.0 to 16.4. Furthermore, the median price-to-earnings multiple increased from 5.0 to 8.5 over the same period. The median revenue growth and EBITDA margins for the industry for the quarter were 0.0% and 1.2%, respectively.

Public Company Key Statistics

Median 52-Week
Return

-26%

Median 3-Year CAGR
Return

-20.9%

Median EV/Revenue
Multiple

1.2x

Median EV/EBITDA
Multiple

16.4x

Median Price/Earnings
Multiple

8.5x

Median EV/Gross CF
Multiple

26.3x

Comparable Public Company Market Price Returns as of December 31, 2018

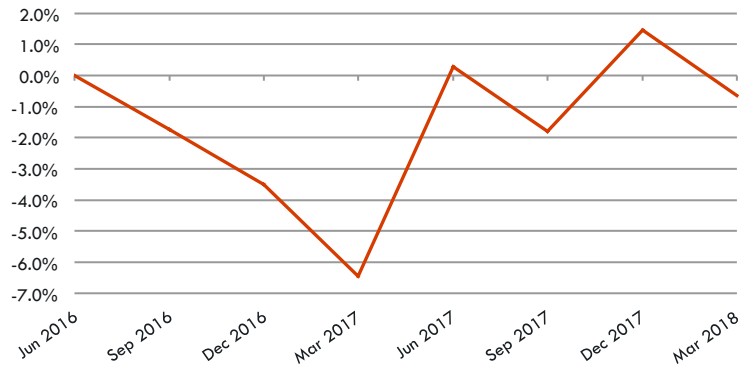
	YTD	3 Month	1 Year	2 Year	3 Year	2016	2015	2014
Ascent Solar Technologies, Inc.	-93.9%	-44.4%	-68.8%	-98.0%	-97.2%	-99.9%	-86.4%	-84.8%
Canadian Solar Inc.	-14.0%	-3.5%	32.6%	-8.1%	-21.3%	-57.9%	19.7%	-18.9%
China Sunergy Co., Ltd.	-14.6%	-14.9%	-34.9%	-67.0%	-72.7%	-98.1%	-9.8%	-79.8%
Ellomay Capital Ltd.	-98.4%	-1.4%	10.2%	2.0%	1.4%	-6.0%	-11.2%	-0.4%
Enphase Energy, Inc.	-14.9%	89.6%	233.6%	40.0%	-29.8%	-71.2%	-75.4%	125.4%
First Solar, Inc.	-82.7%	5.1%	161.9%	1.8%	5.9%	-51.4%	48.0%	-18.4%
JA Solar Holdings Co., Ltd.	-13.1%	-12.1%	0.3%	-12.7%	-11.8%	-50.9%	18.5%	-10.7%
JinkoSolar Holding Co., Ltd.	96.3%	-24.1%	10.1%	-6.6%	-10.7%	-45.0%	40.4%	-32.7%
Song Da Industry Trade	-37.1%	-15.6%	-7.6%	-15.6%	-7.9%	0.6%	-18.1%	8.9%
SunPower Corporation	-58.9%	-5.3%	30.8%	-40.2%	-36.6%	-78.0%	16.2%	-13.4%
ThinkSmart Limited	14.4%	21.9%	-49.0%	N/A	N/A	N/A	N/A	N/A
Yingli Green Energy	-41.0%	-0.6%	-22.6%	-39.4%	-55.1%	-42.6%	-80.7%	-53.5%
Median of Industry Public Companies	26%	-4.4%	5.2%	-12.7%	-21.3%	-51.4%	-9.8%	-18.4%

Multiple year periods are calculated as the average annual return.

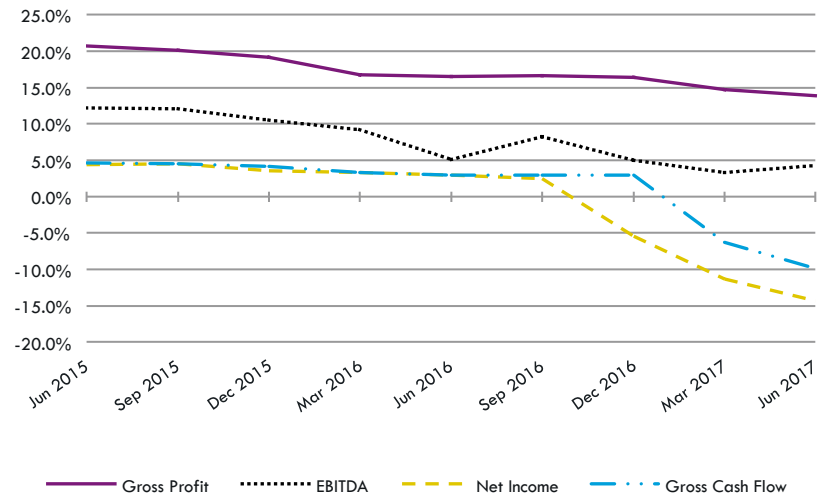
■ Highest Return
 ■ Lowest Return
 ■ Median Return

Industry Revenue Growth and Profit Margins for the Past Two Years

Median Quarterly Revenue Growth of All Solar Energy Companies



Median Gross Profit, EBITDA, Net Income, and Gross Cash Flow Margins



Public Company Median Multiples by Quarter

	12/31/18	9/30/18	6/30/18	3/31/18	12/31/17	9/30/17	3/31/17	12/31/16
EV/Revenues Multiple	1.2x	1.4x	1.0x	1.1x	0.9x	1.1x	1.3x	1.1x
EV/EBITDA Multiple	16.4x	13.0x	15.7x	10.9x	7.3x	7.2x	9.3x	9.0x
Price/Earnings Multiple	8.5x	14.4x	15.0x	4.0x	6.4x	7.9x	9.7x	7.8x
EV/Gross Cash Flows Multiple	26.3x	19.6x	15.0x	7.3x	13.3x	9.5x	19.7x	12.0x

 Highest Multiple

 Lowest Multiple

 Median Multiple

Industry Initial Public Offerings - Solar Energy

(dollars in millions, except share prices)

Offer Date	Company Name	Offer Price	Shares Offered	Amount Raised	Total Assets	Debt	LTM Revenues	LTM EBITDA	LTM Net Income	LTM Cash Flows
4/4/18	TaylorMade Renewables Limited	\$0.54	3.2	\$2.5	\$170.1	\$0.0	\$3.0	(\$9.8)	(\$15.4)	(\$9.8)
3/23/18	PT Sky Energy Indonesia Tbk	\$0.03	203.3	\$250.6	\$2,240.8	\$559.0	\$30.7	(\$111.1)	(\$52.4)	(\$63.5)
2/1/18	Solex Energy Limited	\$0.81	1.4	\$126.0	\$133.3	\$4.7	\$5.3	\$1.7	(\$2.4)	\$3.9
11/30/17	Zodiac Energy Limited	\$0.81	2.0	\$329.6	\$724.2	\$154.1	\$2.6	(\$117.7)	(\$19.5)	(\$113.4)
11/27/16	Ripasso Energy AB (publ)	\$0.43	5.8	\$92.0	\$1,151.2	\$299.3	\$2.7	(\$40.7)	(\$47.1)	(\$22.3)
8/5/15	Sunrun Inc.	\$14.00	17.9	\$53.8	\$106.2	\$33.9	\$238.6	(\$26.4)	(\$32.3)	(\$24.0)
3/26/15	SolarEdge Technologies, Inc.	\$18.00	7.0	\$64.2	\$2,587.5	\$1,143.6	\$215.4	\$254.9	\$164.9	\$254.9
9/30/14	Vivint Solar, Inc.	\$16.00	20.6	\$319.0	\$3,367.9	\$1,414.7	\$20.4	\$427.9	\$199.6	\$434.7
12/12/12	Tesla Energy Operations, Inc.	\$8.00	11.5	\$93.5	\$176.3	\$77.9	\$124.1	\$16.9	\$11.8	\$18.7
3/29/12	Enphase Energy, Inc.	\$6.00	6.5	\$225.0	\$492.9	\$150.0	\$149.5	\$142.5	\$128.4	\$142.5
5/13/10	JinkoSolar Holding Co., Ltd.	\$11.00	5.8	\$98.1	\$112.5	\$44.3	\$274.7	\$14.8	\$10.0	\$15.8
6/7/07	Yingli Green Energy Holding Company Limited	\$11.00	29.0	\$400.0	\$255.1	\$71.0	\$241.3	(\$5.1)	(\$11.3)	\$2.4
5/17/07	China Sunergy Co., Ltd.	\$11.00	7.7	\$115.5	\$66.3	\$23.2	\$149.5	\$7.8	(\$3.6)	\$8.0
2/6/07	Ascent Solar Technologies, Inc.	\$5.50	3.0	\$16.5	\$0.2	\$0.2	\$89.2	\$0.0	(\$7.2)	\$0.0
12/13/05	Suntech Power Holdings Co. Ltd.	\$15.00	26.4	\$395.7	\$135.2	\$51.3	\$174.7	\$44.0	\$31.1	\$46.6
5/31/16	GTN Limited	nm	nm	\$115.5	\$176.3	\$71.0	\$149.5	\$1.7	(\$3.6)	\$3.9

Multiple year periods are calculated as the average annual return.

■ Highest Return
 ■ Lowest Return
 ■ Median Return

Recent Merger and Acquisition Transactions for a Majority Stake (dollars in millions)

Transaction Date	Target	Acquirer	Transaction Size	% Bought
12/13/18	Sempra Solar Holdings, LLC	Consolidated Edison Development	\$2,116.0	100%
10/1/18	Gintech Energy Corporation	Neo Solar Power Corp. (nka:United Renewable Energy Co., Ltd.)	\$494.5	51%
10/1/18	Solartech Energy Corp.	Neo Solar Power Corp. (nka:United Renewable Energy Co., Ltd.)	\$350.1	100%
7/19/18	FOTOVOLTAICO SOLAR Y ENERGIAS RENOVABLES FOTOSOLAR, S.L.	Plenium Partners Asset Management, S.G.E.I.C., S.A.; Helia Renovables, FCR	\$345.7	80%
4/19/18	Aerospace Baykee	Beijing Aerospace Changfeng	\$37.2	100%
11/21/16	SolarCity Corporation (nka:Tesla Energy Operations, Inc.)	Tesla Motors, Inc.	\$6,543.2	100%
3/24/16	Caithness Energy	Global Infrastructure Partners	\$4.4	100%
2/11/16	Gestamp Asetym Solar	KKR & Co. L.P.	\$34.8	63%
8/5/15	Aaron Services Ltd.	Lakehouse plc (nka:Sureserve Group plc)	\$15.4	100%

■ USA
 ■ International
 ■ Highest
 ■ Lowest
 ■ Median

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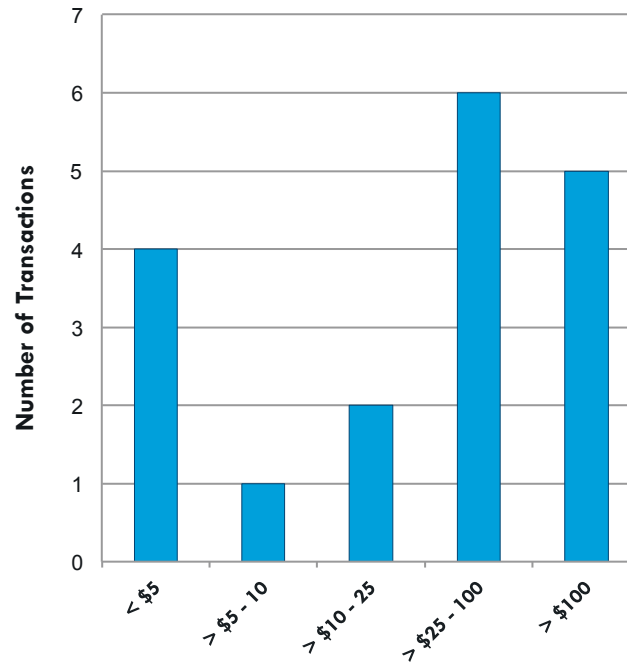
Recent Merger and Acquisition Transactions for a Majority Stake (dollars in millions)

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Transaction Date	Target	Acquirer	Transaction Size	% Bought
7/30/15	Solairedirect SA	ENGIE SA	\$275.4	95%
6/25/15	Solar Alliance of Amer.	Finavera Wind Energy	\$5.0	100%
5/28/15	Solar Juice Pty Ltd.	SPI China (HK) Limited	\$28.0	80%
5/13/15	REC Solar ASA	Bluestar Elkem Investment	\$634.4	100%
3/30/15	Recurrent Energy, LLC	Canadian Solar Inc.	\$265.0	100%
12/31/14	Next Phase Solar, Inc.	Enphase Energy, Inc.	\$2.5	100%
11/18/14	Avacos Solar	ONEnergy Inc.	\$1.4	100%
11/4/14	Hudson Energy Solar Corp.	SunEdison, Inc.; TerraForm Power, Inc.	\$56.0	100%
9/22/14	Tripod Energy AB	Innotech Solar AS	\$6.4	100%
Median of the 18 M&A Transaction Targets			\$32.4	100%

USA
 International
 Highest
 Lowest
 Median

Recent Merger and Acquisition Transactions for a Majority Stake (dollars in millions) as of December 31, 2018



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Definitions of Financial Terms Used in this Quarterly Industry Update:

Enterprise Value (EV): Market Value of Equity + Market Value of Debt —Cash

Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA): Profitability metric sometimes also referred to as operating profit or operating earnings.

Gross Cash Flows: Net Income + Depreciation and Amortization Expense

Latest Twelve Months (LTM): Financial information is as of the latest twelve months through the date of this Quarterly Industry Update.

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