

# Quarterly Industry Update

As of March 31, 2017

Industry: 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 March 31, 2016, the median 52-week share price return of the Solar Energy industry was -41.2%. Between March 31, 2015 and March 31, 2017, the median EV/EBITDA multiple decreased from 8.8 to 7.5. Furthermore, the median price-to-earnings multiple decreased from 10.5 to 5.4 over the same period.

## Comparable Public Company Key Statistics

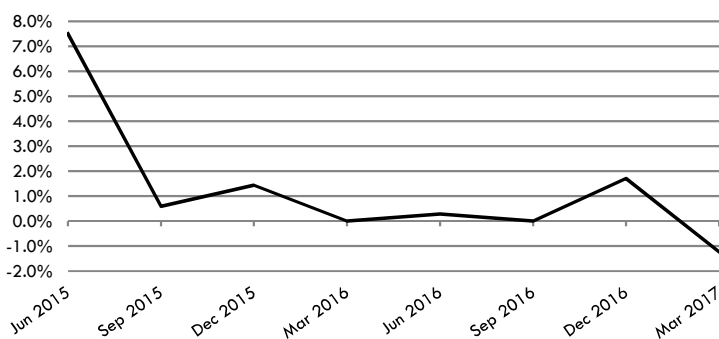
Median 52-Week Return	-41.2%	Median EV/Revenue Multiple	0.9x	Median Price/Earnings Multiple	5.4x
Median 3-Year CAGR Return	-27.4%	Median EV/EBITDA Multiple	7.5x	Median EV/Gross CF Multiple	8.5x

## Comparable Public Company Market Price Returns (As of March 31, 2017)

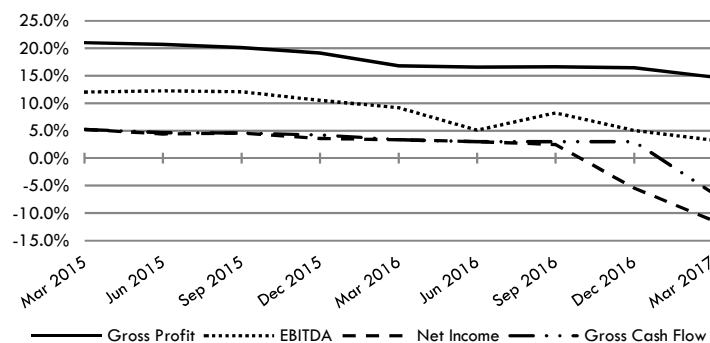
	YTD	3 Month	1 Year	2 Year	3 Year	5 Year	2016	2015	2014	2013	2012
Ascent Solar Technologies, Inc.	-44.8%	-44.8%	-99.9%	-99.2%	-97.6%	-89.5%	-99.9%	-86.4%	-84.8%	13.7%	59.0%
Canadian Solar Inc.	0.7%	0.7%	-36.4%	-39.4%	-27.4%	31.0%	-57.9%	19.7%	-18.9%	777.1%	27.8%
China Sunergy Co., Ltd.	155.2%	155.2%	-83.3%	-82.3%	-76.8%	-49.8%	-98.1%	-9.8%	-79.8%	324.6%	26.8%
Ellomay Capital Ltd.	-0.5%	-0.5%	-5.6%	-2.7%	-6.4%	4.2%	-6.0%	-11.2%	-0.4%	62.9%	6.8%
Enphase Energy, Inc.	35.6%	35.6%	-41.2%	-67.8%	-42.9%	-28.5%	-71.2%	-75.4%	125.4%	73.7%	N/A
First Solar, Inc.	-15.6%	-15.6%	-60.4%	-32.7%	-27.0%	1.6%	-51.4%	48.0%	-18.4%	77.1%	-8.6%
JA Solar Holdings Co., Ltd.	37.4%	37.4%	-24.0%	-17.3%	-13.7%	-3.3%	-50.9%	18.5%	-10.7%	114.8%	-36.3%
JinkoSolar Holding Co., Ltd.	8.8%	8.8%	-20.8%	-19.6%	-16.0%	22.1%	-45.0%	40.4%	-32.7%	371.8%	24.2%
Song Da Industry Trade Joint Stock Company	-14.2%	-14.2%	-23.0%	-8.1%	-12.9%	-10.7%	0.6%	-18.1%	8.9%	-6.6%	8.1%
SunPower Corporation	-7.7%	-7.7%	-72.7%	-55.9%	-42.6%	-0.9%	-78.0%	16.2%	-13.4%	430.4%	-9.8%
ThinkSmart Limited	-5.7%	-5.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Yingli Green Energy Holding Company Limited	-16.5%	-16.5%	-52.5%	-65.8%	-63.2%	-43.0%	-42.6%	-80.7%	-53.5%	114.9%	-38.2%
<b>Median of Industry Public Companies</b>	<b>-3.1%</b>	<b>-3.1%</b>	<b>-41.2%</b>	<b>-39.4%</b>	<b>-27.4%</b>	<b>-3.3%</b>	<b>-51.4%</b>	<b>-9.8%</b>	<b>-18.4%</b>	<b>114.8%</b>	<b>7.5%</b>

(Multiple year periods are calculated as the average annual return.)

## Median Quarterly Revenue Growth of All Solar Energy Companies



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



## Median Public Company Multiples of the Solar Energy Industry

Date:	3/31/2015	6/30/2015	9/30/2015	12/31/2015	3/31/2016	6/30/2016	9/30/2016	12/31/2016	3/31/2017
EV/Revenues Multiple	1.4x	1.2x	1.1x	1.3x	1.1x	0.9x	1.2x	1.1x	0.9x
EV/EBITDA Multiple	8.8x	8.5x	9.0x	9.3x	7.2x	7.3x	6.8x	6.0x	7.5x
Price/Earnings Multiple	10.5x	8.4x	7.8x	9.7x	7.9x	6.4x	5.4x	5.0x	5.4x
EV/Gross Cash Flows Multiple	11.8x	8.5x	12.0x	19.7x	9.5x	13.3x	11.2x	14.9x	8.5x

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# Quarterly Industry Update

As of March 31, 2017

Industry: Solar Energy

## Industry Initial Public Offerings (dollars in millions, except share prices)

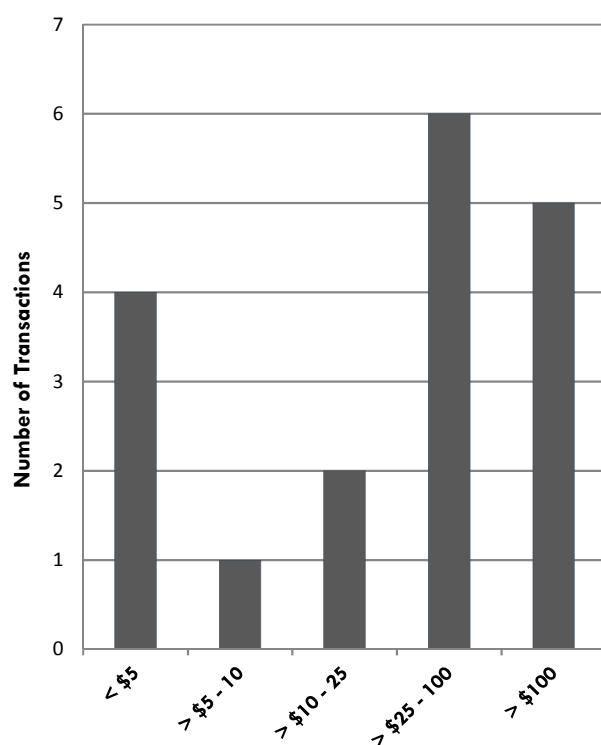
Offer Date	Company Name	Offer Price	Shares Offered	Amount Raised	Total Assets	Debt	LTM Revenues	LTM EBITDA	LTM Net Income	LTM Cash Flows
11/27/2016	Ripasso Energy AB (publ)	\$0.43	5.8	\$2.5	\$20.2	\$0.0	\$0.1	(\$1.2)	(\$1.8)	(\$1.2)
8/5/2015	Sunrun Inc.	\$14.00	17.9	\$250.6	\$2,016.4	\$447.1	\$217.8	(\$105.0)	(\$77.1)	(\$57.4)
3/26/2015	SolarEdge Technologies, Inc.	\$18.00	7.0	\$126.0	\$133.3	\$4.7	\$215.4	\$1.7	(\$2.4)	\$3.9
9/30/2014	Vivint Solar, Inc.	\$16.00	20.6	\$329.6	\$566.3	\$140.5	\$14.3	(\$75.1)	\$38.6	(\$70.8)
12/12/2012	SolarCity Corporation	\$8.00	11.5	\$92.0	\$1,151.2	\$299.3	\$124.1	(\$40.7)	(\$47.1)	(\$22.3)
3/29/2012	Enphase Energy, Inc.	\$6.00	6.5	\$53.8	\$106.2	\$34.1	\$149.5	(\$26.3)	(\$32.3)	(\$24.0)
5/13/2010	JinkoSolar Holding Co., Ltd.	\$11.00	5.8	\$64.2	\$378.8	\$167.4	\$274.7	\$37.3	\$24.1	\$37.3
6/7/2007	Yingli Green Energy Holding Company Limited	\$11.00	29.0	\$319.0	\$435.4	\$182.9	\$241.3	\$55.3	\$25.8	\$62.2
5/17/2007	China Sunergy Co., Ltd.	\$11.00	8.5	\$93.5	\$176.3	\$77.9	\$149.5	\$17.0	\$11.8	\$18.7
2/6/2007	JA Solar Holdings Co., Ltd.	\$15.00	15.0	\$225.0	\$7.3	\$0.0	\$0.0	(\$0.5)	(\$0.7)	(\$0.5)
12/18/2006	Trina Solar Limited	\$18.50	5.3	\$98.1	\$112.5	\$39.1	\$91.6	\$14.8	\$10.0	\$15.8
11/16/2006	First Solar, Inc.	\$20.00	20.0	\$400.0	\$255.1	\$71.0	\$95.9	(\$5.1)	(\$11.3)	\$2.4
11/8/2006	Canadian Solar Inc.	\$15.00	7.7	\$115.5	\$57.5	\$23.2	\$37.4	\$8.3	(\$2.6)	\$8.5
7/10/2006	Ascent Solar Technologies, Inc.	\$5.50	3.0	\$16.5	\$0.2	\$0.2	\$0.0	\$0.0	(\$7.2)	\$0.0
12/13/2005	Suntech Power Holdings Co. Ltd.	\$15.00	26.4	\$395.7	\$135.2	\$51.3	\$174.7	\$49.9	\$34.0	\$52.6
<b>Median of All IPOs</b>		<b>nm</b>	<b>nm</b>	<b>\$115.5</b>	<b>\$135.2</b>	<b>\$51.3</b>	<b>\$124.1</b>	<b>\$0.0</b>	<b>(\$1.8)</b>	<b>\$2.4</b>

nm: not meaningful

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

Transaction Date	Target	Acquirer	Transaction Size	% Bought
11/21/2016	SolarCity Corporation	Tesla Motors, Inc.	\$7,067.1	100%
11/1/2016	Human Energy Alliance Labs	MJP International Ltd.	\$4.4	80%
5/4/2016	Global Resource Options	EDF Renewable Energy	\$34.8	100%
4/29/2016	Desri Portal Ridge	Firststar Development, LLC	\$37.8	100%
3/24/2016	Caithness Energy	Global Infrastructure Partners	\$20.0	100%
2/11/2016	Gestamp Asetym Solar	KKR & Co. L.P.	\$800.0	80%
11/2/2015	Aaron Services Ltd.	Lakehouse plc	\$15.4	100%
10/15/2015	Suniva Inc.	Shunfeng International	\$45.0	63%
8/5/2015	Energy Source Partners	Revolution Lighting Tech	\$30.1	100%
7/30/2015	Solairedirect SA	ENGIE SA	\$275.4	95%
6/25/2015	Solar Alliance of Amer.	Finavera Wind Energy	\$5.0	100%
5/28/2015	Solar Juice Pty Ltd.	SPI China (HK) Limited	\$28.0	80%
5/13/2015	REC Solar ASA	Bluestar Elkem Investment	\$634.4	100%
3/30/2015	Recurrent Energy, LLC	Canadian Solar Inc.	\$265.0	100%
12/31/2014	Next Phase Solar, Inc.	Enphase Energy, Inc.	\$2.5	100%
11/18/2014	Avacos Solar	ONEnergy Inc.	\$1.4	100%
11/4/2014	Hudson Energy Solar Corp.	SunEdison, Inc.; TerraForm	\$56.0	100%
9/22/2014	Tripod Energy AB	Innotech Solar AS	\$6.4	100%
<b>Median of the 18 M&amp;A Transaction Targets</b>			<b>\$32.4</b>	<b>100%</b>

## Size of the 18 M&A Transactions (dollars in millions)



### 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.

# Quarterly Industry Update

As of March 31, 2017

Clean Energy Industry Aggregates



## Comparable Public Company Key Statistics

Median 52-Week Return	-23.5%	Median EV/Revenue Multiple	1.0x	Median Price/Earnings Multiple	16.6x
Median Year-to-Date Return	-6.3%	Median EV/EBITDA Multiple	10.9x	Median EV/Gross CF Multiple	35.9x

## Comparable Public Company Market Price Returns (As of March 31, 2017)

	YTD	3 Month	1 Year	2 Year	3 Year	5 Year	2016	2015	2014	2013	2012
Ameresco, Inc.	19.1%	19.1%	37.3%	-5.9%	-4.7%	-13.5%	-12.0%	-10.7%	-27.5%	-1.5%	-28.5%
Amyris, Inc.	-27.4%	-27.4%	-52.3%	-53.0%	-47.8%	-36.6%	-54.9%	-21.4%	-61.1%	69.6%	-73.0%
Ascent Solar Technologies, Inc.	-44.8%	-44.8%	-99.9%	-99.2%	-97.6%	-89.5%	-99.9%	-86.4%	-84.8%	13.7%	59.0%
Canadian Solar Inc.	0.7%	0.7%	-36.4%	-39.4%	-27.4%	31.0%	-57.9%	19.7%	-18.9%	777.1%	27.8%
Codexis, Inc.	4.3%	4.3%	54.3%	2.6%	33.0%	5.6%	8.7%	67.9%	80.0%	-36.7%	-58.3%
Deinove SA	-6.3%	-6.3%	-48.5%	-48.2%	-52.1%	-31.2%	-46.4%	-45.4%	-56.8%	32.1%	58.0%
Ellomay Capital Ltd.	-0.5%	-0.5%	-5.6%	-2.7%	-6.4%	4.2%	-6.0%	-11.2%	-0.4%	62.9%	6.8%
Enphase Energy, Inc.	35.6%	35.6%	-41.2%	-67.8%	-42.9%	-28.5%	-71.2%	-75.4%	125.4%	73.7%	N/A
First Solar, Inc.	-15.6%	-15.6%	-60.4%	-32.7%	-27.0%	1.6%	-51.4%	48.0%	-18.4%	77.1%	-8.6%
Gevo, Inc.	-67.1%	-67.1%	-78.9%	-86.3%	-85.2%	-78.9%	-72.1%	-87.1%	-77.6%	-7.1%	-75.5%
Green Plains Inc.	-11.1%	-11.1%	55.1%	-6.9%	-6.2%	18.1%	21.6%	-7.6%	27.9%	145.0%	-19.0%
JA Solar Holdings Co., Ltd.	37.4%	37.4%	-24.0%	-17.3%	-13.7%	-3.3%	-50.9%	18.5%	-10.7%	114.8%	-36.3%
JinkoSolar Holding Co., Ltd.	8.8%	8.8%	-20.8%	-19.6%	-16.0%	22.1%	-45.0%	40.4%	-32.7%	371.8%	24.2%
MGP Ingredients, Inc.	8.5%	8.5%	123.7%	100.7%	100.3%	58.7%	92.6%	63.6%	205.6%	51.8%	-32.1%
NextEra Energy Partners, LP	29.7%	29.7%	21.8%	-13.0%	N/A	N/A	-14.4%	-11.6%	N/A	N/A	N/A
Pacific Ethanol, Inc.	-27.9%	-27.9%	46.4%	-20.3%	-24.0%	-16.1%	98.7%	-53.7%	102.9%	7.3%	-70.2%
Song Da Industry Trade Joint Stock Company	-14.2%	-14.2%	-23.0%	-8.1%	-12.9%	-10.7%	0.6%	-18.1%	8.9%	-6.6%	8.1%
SunPower Corporation	-7.7%	-7.7%	-72.7%	-55.9%	-42.6%	-0.9%	-78.0%	16.2%	-13.4%	430.4%	-9.8%
TerraForm Power, Inc.	-3.4%	-3.4%	43.0%	-41.8%	N/A	N/A	1.8%	-59.3%	N/A	N/A	N/A
TerraVia Holdings, Inc.	-37.0%	-37.0%	-64.3%	-49.7%	-60.3%	-45.2%	-53.6%	-3.9%	-76.3%	38.5%	-33.9%
The Andersons, Inc.	-15.2%	-15.2%	20.7%	-4.3%	-13.8%	3.1%	41.3%	-40.5%	-10.6%	107.9%	-1.7%
ThinkSmart Limited	-5.7%	-5.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Yingli Green Energy Holding Company Limited	-16.5%	-16.5%	-52.5%	-65.8%	-63.2%	-43.0%	-42.6%	-80.7%	-53.5%	114.9%	-38.2%
<b>Median of Industry Public Companies</b>	<b>-6.3%</b>	<b>-6.3%</b>	<b>-23.5%</b>	<b>-26.5%</b>	<b>-25.5%</b>	<b>-7.0%</b>	<b>-43.8%</b>	<b>-11.4%</b>	<b>-15.9%</b>	<b>66.2%</b>	<b>-19.0%</b>

(Multiple year periods are calculated as the average annual return.)

# Quarterly Industry Update

As of March 31, 2017

Clean Energy Industry Aggregates



## Median Public Company Multiples of the Clean Energy Industry Aggregates

Date:	3/31/2015	6/30/2015	9/30/2015	12/31/2015	3/31/2016	6/30/2016	9/30/2016	12/31/2016	3/31/2017
EV/Revenues Multiple	1.3x	1.2x	1.1x	1.3x	1.2x	1.2x	1.6x	1.4x	1.0x
EV/EBITDA Multiple	9.0x	8.8x	9.3x	10.7x	8.7x	12.9x	13.8x	13.1x	10.9x
Price/Earnings Multiple	22.3x	23.0x	15.7x	20.6x	14.3x	11.9x	8.0x	9.9x	16.6x
EV/Gross Cash Flows Multiple	10.6x	19.5x	22.2x	13.0x	29.2x	18.0x	9.0x	27.6x	35.9x

## Industry Initial Public Offerings - Clean Energy Industry Aggregates (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
11/27/2016	Ripasso Energy AB (publ)	\$0.43	5.8	\$2.5	\$20.2	\$0.0	\$0.1	(\$1.2)	(\$1.8)	(\$1.2)
5/11/2016	Green & Smart Holdings PLC	\$0.13	44.4	\$5.8	\$9.1	\$2.1	\$4.4	\$1.0	\$1.0	\$1.0
8/5/2015	Sunrun Inc.	\$14.00	17.9	\$250.6	\$2,016.4	\$447.1	\$217.8	(\$105.0)	(\$77.1)	(\$57.4)
3/26/2015	SolarEdge Technologies, Inc.	\$18.00	7.0	\$126.0	\$133.3	\$4.7	\$215.4	\$1.7	(\$2.4)	\$3.9
9/30/2014	Vivint Solar, Inc.	\$16.00	20.6	\$329.6	\$566.3	\$140.5	\$14.3	(\$75.1)	\$38.6	(\$70.8)
12/12/2012	SolarCity Corporation	\$8.00	11.5	\$92.0	\$1,151.2	\$299.3	\$124.1	(\$40.7)	(\$47.1)	(\$22.3)
3/29/2012	Enphase Energy, Inc.	\$6.00	6.5	\$53.8	\$106.2	\$34.1	\$149.5	(\$26.3)	(\$32.3)	(\$24.0)
1/18/2012	Renewable Energy Group, Inc.	\$10.00	7.2	\$72.0	\$472.6	\$109.5	\$626.8	\$78.6	(\$15.9)	\$85.5
6/23/2011	KiOR, Inc.	\$15.00	10.0	\$150.0	\$82.2	\$9.2	\$0.0	(\$36.0)	(\$53.1)	(\$34.3)
5/26/2011	TerraVia Holdings, Inc.	\$18.00	11.0	\$197.6	\$86.7	\$0.2	\$40.0	(\$16.7)	(\$19.6)	(\$15.8)
2/8/2011	Gevo, Inc.	\$15.00	7.2	\$107.3	\$57.9	\$20.3	\$2.4	(\$32.0)	(\$40.8)	(\$29.2)
9/27/2010	Amyris, Inc.	\$16.00	5.3	\$84.8	\$305.0	\$12.8	\$68.1	(\$62.8)	(\$76.0)	(\$56.4)
5/13/2010	JinkoSolar Holding Co., Ltd.	\$11.00	5.8	\$64.2	\$378.8	\$167.4	\$274.7	\$37.3	\$24.1	\$37.3
4/21/2010	Codexis, Inc.	\$13.00	6.0	\$78.0	\$99.0	\$7.9	\$82.9	(\$11.1)	(\$20.3)	(\$6.0)
6/14/2007	BioFuels Energy Corp.	\$10.50	5.3	\$55.1	\$121.5	\$0.0	\$0.0	(\$12.2)	(\$3.1)	(\$12.2)
6/7/2007	Yingli Green Energy Holding Company Limited	\$11.00	29.0	\$319.0	\$435.4	\$182.9	\$241.3	\$55.3	\$25.8	\$62.2
5/17/2007	China Sunergy Co., Ltd.	\$11.00	8.5	\$93.5	\$176.3	\$77.9	\$149.5	\$17.0	\$11.8	\$18.7
2/6/2007	JA Solar Holdings Co., Ltd.	\$15.00	15.0	\$225.0	\$7.3	\$0.0	\$0.0	(\$0.5)	(\$0.7)	(\$0.5)
12/18/2006	Trina Solar Limited	\$18.50	5.3	\$98.1	\$112.5	\$39.1	\$91.6	\$14.8	\$10.0	\$15.8
11/16/2006	First Solar, Inc.	\$20.00	20.0	\$400.0	\$255.1	\$71.0	\$95.9	(\$5.1)	(\$11.3)	\$2.4
11/13/2006	Yield10 Bioscience, Inc.	\$14.00	6.8	\$95.2	\$22.0	\$0.0	\$5.1	(\$7.7)	(\$8.6)	(\$7.1)
11/8/2006	Canadian Solar Inc.	\$15.00	7.7	\$115.5	\$57.5	\$23.2	\$37.4	\$8.3	(\$2.6)	\$8.5
8/22/2006	The Andersons, Inc.	\$37.00	2.3	\$83.3	\$600.7	\$248.8	\$1,331.6	\$68.9	\$28.9	\$90.8
7/12/2006	FutureFuel Corp.	\$8.00	22.5	\$180.0	N/A	N/A	N/A	N/A	N/A	N/A
<b>Median of All IPOs</b>		<b>nm</b>	<b>nm</b>	<b>\$96.6</b>	<b>\$121.5</b>	<b>\$23.2</b>	<b>\$82.9</b>	<b>(\$5.1)</b>	<b>(\$3.1)</b>	<b>(\$1.2)</b>

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