

US Alternative Energy & YieldCos

2Q15 Playbook: Seeking Shade from Summer

Equities

North America

Electric Components & Equipment

Reporting season could provide needed reprieve for renewables sector

We expect 2Q to provide reasonable results, with targets largely achieved across the sector; with just 18-months until PTC and ITC decreases, we suspect 2Q results could yet drive a meaningful translation of renewable prospects into firm utility-scale offtakes as parties scramble to lock in PPAs, land and equipment to ensure an adequate in-service timeline. We emphasize NEE as particularly well positioned to realize this backlog. As for SUNE, we expect a substantial update of its disclosures around development expectations, backlog, and simply organic execution could all bode well. Additionally, we suspect mgmt will only reiterate the conservative guidance increase associated with the VSLR acquisition to TERP (+\$0.05 on 2017). We flag a wider point of caution on 2Q financial results themselves, with a variety of indicators suggesting wind output was meaningfully below normal across several regions of the country. Another potential key update could come from NRG Energy which could discuss thoughts around a NRG Solar restructuring as management could once again seek ways to carve up the business to make itself more attractive to discrete investor bases.

July has not been kind to Solar or YieldCos with TERP/SUNE falling to earth

While the S&P has edged out a +1.3% gain MTD, solar/YieldCos have dropped ~7.5% each in volatile trading led by the tandem of TERP (-15.8%) and SUNE (-11.1%) as the former investor favorites have quickly fallen out of favor. We attribute part of this decline to recycling of capital amongst peers (see below) but also to the puzzlingly negative reaction to the Vivint Solar deal. We flag macro headwinds with concerns around rising rates thrashing the MLP sector which could well keep the YieldCo sector in the doldrums into a September possible Fed hike: this could be the bottom. We are largely cautious on the YieldCo sector into this datapoint, particularly given the heavy ongoing calendar. Moreover, with parent sponsors hurting (NRG, SUNE) they are liable to pursue deals less accretive to YieldCo subs.

Liquidity crunch hits YieldCos – things could get worse before they get better

With the YieldCo sub-sector still in its relative infancy we see growing pains manifesting. In the last ten months the YieldCo market cap has increased by 17% (thanks in part to CAFD IPO) while the public float has increased 61%, indicating to us that the market might be fatigued. Between NEP (\$800Mn-\$1Bn) and NYLD (~\$600Mn), we see another \$1.4-\$1.6Bn of expected capital recycling to the sponsors in 2015. This is on top of the \$1Bn that TERP plans to issue for the Vivint Solar deal (\$740Mn equity/\$335Mn debt) and \$1.2Bn for TERP Global. We see the YieldCo investor base as still relatively limited with a significant hedge fund base (ex. TERP is 35% HF owned). We see this improving over time as the P/Es decline and yields improve, thus drawing broader investor interest but in the short term we think YieldCos could face pressure without an incremental buyer.

We don't see Vivint as the principal weight on SUNE shares

Contrary to some investors, we *do not* see the recent acquisition of VSLR as the principal issue with SUNE shares, which have slid 21% from their highs early Monday. We flag the coincident kick-off of SUNE's TERP Global spin as obfuscating factors. In contrast to widespread concerns around the VSLR transaction, we see the deal price as justified when compared against other solar developers, including our own SUNE Devco model. We have revised our SUNE sum-of-the-parts to more explicitly value the distributed business, reflecting break-even economics for the VSLR deal post-ITC economics even off our initial estimate of post-ITC margin profile.

Julien Dumoulin-Smith

Analyst

julien.dumoulin-smith@ubs.com

+1-212-713 9848

Michael Weinstein

Associate Analyst

michael.weinstein@ubs.com

+1-212-713 3182

Paul Zimbardo

Associate Analyst

paul.zimbardo@ubs.com

+1-212-713 1033

Contents

The PM Summary of YieldCos/SolarCos	4
Is The YieldCo Glass Half Full?	6
YieldCos: How Do They Stack Up?	7
2Q15 Themes:	9
SUNE/ TERP led 2Q15 re: project acquisitions, awards, development.....	10
How low will solar PPA prices go in the near term?.....	13
Expectations growing on community solar	14
Commercial market still immature in comparison.....	15
Resi players expect costs to reach the \$2.50/W level by 2017	16
Residential Retail Sector Update	17
US/ China trade case update	18
California Legislative Updates	18
Battery Storage	20
Merchant Transmission for YieldCos	21
Utility ROFO Selldowns Coming: D & SO?	23
Weather & Renewable Generation in 2Q	25
8Point3 Energy Partners	26
Abengoa Yield.....	30
Canadian Solar	32
Hannon Armstrong (HASI).....	35
NextEra Energy Partners.....	39
NRG Yield.....	42
Pattern Energy.....	48
SolarCity.....	53
Sun Edison	57
TerraForm Power.....	72
Appendix: Select Recent Transactions.....	76
Appendix: Relevant Recent Solar Research.....	77

Julien Dumoulin-Smith

Analyst
julien.dumoulin-smith@ubs.com
+1-212-713 9848

Michael Weinstein

Associate Analyst
michael.weinstein@ubs.com
+1-212-713 3182

Paul Zimbardo

Associate Analyst
paul.zimbardo@ubs.com
+1-212-713 1033

Earnings and Price Target Snapshots

We present YieldCo and Solar Ratings, Price Targets, and relevant metrics. Rated companies are UBS estimates; unrated companies are FactSet consensus.

Figure 1: Solar and YieldCo Comp Sheets

	Ticker	Rating	Market Cap. (\$ in millions)	Price 7/23/2015	Price Target	P/E Multiple					
						2013E	2014E	2015E	2016E	2017E	2018E
SOLARCOs											
First Solar Inc	FSLR	Neutral	4,330	42.95	60.00	9.9	16.5	8.6	9.3	10.5	11.4
SunPower Corp	SPWR	Neutral	3,441	25.82	31.00	15.5	20.1	19.9	14.0	11.3	11.8
SunEdison Inc.	SUNE	Buy	7,327	26.69	29.66	nm	nm	nm	113.6	46.6	16.9
Canadian Solar Inc.	CSIQ	Not Rated	1,438	25.81	NA	6.3	6.3	9.3	10.2	8.9	na
Hanwha Q Cells Co.	HQCL	Not Rated	144	14.50	NA	na	na	nm	na	na	na
JA Solar Holdings Co.	JASO	Not Rated	391	7.75	NA	8.8	8.0	9.1	5.4	4.8	na
JinkoSolar Holding Co.	JKS	Not Rated	779	25.06	NA	10.1	10.0	7.5	6.4	5.7	na
Real Goods Solar, Inc.	RGSE	Not Rated	7	1.53	NA	nm	nm	nm	na	na	na
ReneSola Ltd.	SOL	Not Rated	114	1.32	NA	nm	nm	nm	nm	nm	na
SolarCityCorp	SCTY	Not Rated	5,306	54.78	NA	nm	nm	nm	nm	nm	nm
SolarEdge Technologies Inc.	SEDG	Not Rated	1,178	30.11	NA	na	na	55.8	25.4	17.1	19.3
Trina Solar Ltd.	TSL	Not Rated	789	9.26	NA	12.5	11.4	9.5	7.6	4.9	na
Vivint Solar Inc.	VSLR	Not Rated	1,672	15.78	NA	nm	nm	nm	nm	nm	nm
Yingli Green Energy Holding Co.	YGE	Not Rated	171	0.94	NA	nm	nm	nm	nm	nm	na
Enphase	ENPH	Not Rated	250	5.67	NA	94.5	nm	27.0	9.0	8.5	37.8
Average						22.8	13.7	18.9	22.3	13.1	19.5
	Rating	Market Cap. (\$ in millions)	Price 7/23/2015	Price Target	Dividend Yield (%)						
					2013E	2014E	2015E	2016E	2017E	2018E	
PRIMARY YELDCOs											
Abengoa Yield PLC	ABY	Not Rated	2,285	28.56	N/A	na	1.94%	5.76%	7.59%	8.68%	9.80%
8point3 Energy Partners	CAFD	Neutral	335	16.76	21.00	na	na	3.03%	5.58%	6.54%	7.84%
Hannon Armstrong Sustainable Inf	HASI	Buy	663	20.39	22.00	na	5.21%	5.21%	6.10%	7.32%	8.58%
NextEra Energy Partners LP	NEP	Neutral	751	35.28	44.00	na	2.13%	3.25%	3.82%	4.49%	5.28%
NRG Yield	NYLD.A	Neutral	1,495	19.34	27.00	6.20%	7.45%	4.11%	4.86%	5.74%	6.77%
Pattern Energy Group A	PEGI	Not Rated	1,678	24.24	N/A	5.96%	5.96%	5.94%	6.84%	7.76%	9.12%
Terraform Power	TERP	Buy	4,610	31.63	52.00	na	3.32%	3.42%	4.14%	4.97%	4.35%
Tranastla Renewables	RNW-C	Not Rated	2,339	12.26	N/A	6.62%	6.62%	6.61%	6.85%	7.17%	7.34%
Average						6.3%	4.7%	4.7%	5.7%	6.6%	7.4%
SECONDARY YELDCOs											
Algonquin Power & Utilities Corp.	AQN-C/	Not Rated	2,224	9.31	NA	na	4.77%	5.06%	5.59%	na	na
Brookfield Renewable Energy Par	BEP.UT	Not Rated	10,017	36.33	NA	na	4.46%	4.75%	5.13%	5.45%	5.78%
Capital Power Corporation	CPX-C/	Not Rated	2,214	21.71	NA	na	6.42%	6.83%	7.13%	na	na
Capstone Infrastructure Corporatio	CSE-C/	Not Rated	286	3.05	NA	na	9.84%	9.84%	9.84%	9.84%	na
Greencoast UK Wind Plc	UKW-GI	Not Rated	521	1.13	NA	na	5.45%	5.42%	5.58%	5.67%	na
Innergex Renewable Energy Inc.	INE-CA	Not Rated	1,085	10.71	NA	na	5.79%	5.84%	5.79%	na	na
Renewables Infrastructure Group I	TRIG-G	Not Rated	540	1.03	NA	na	6.12%	6.31%	6.41%	na	na
Saeta Yield SA	SAY-ES	Not Rated	768	9.42	NA	na	7.22%	7.62%	7.99%	7.64%	7.43%
Average						NA	6.3%	6.5%	6.7%	7.1%	6.6%

Source: FactSet (Companies that are Not Rated), Company reports, and UBS estimates

2Q Earnings Cheat Sheet

We include call times and dial-in information as best available through the publishing date. Unannounced dates are FactSet estimates.

Figure 2: 2Q Call Information

Solar					
First Solar Inc	FSLR	08/04/2015 Unspecified	N/A		N/A
SunPower Corp	SPWR	07/28/2015 Specific Time	07/28/2015 4:30 PM	Dial In:517-623-4618, Passcode SunPower	
SunEdison Inc.	SUNE	08/05/2015 Unspecified	N/A		N/A
SolarCity Corp	SCTY	07/29/2015 After Market	07/29/2015 5:00 PM	Dial In:877-407-0784, Passcode	
Vivint Solar Inc.	VSLR	08/11/2015 Unspecified	N/A		N/A
YieldCo					
Abengoa Yield PLC	ABY	08/11/2015 Unspecified	N/A		N/A
8Point3 Energy Partners LP	CAFD	08/11/2015 Unspecified	N/A		N/A
Hannon Armstrong Sustainable Infracore	HASI	08/06/2015 Unspecified	N/A		N/A
NextEra Energy Partners LP	NEP	08/03/2015 Before Market	08/03/2015 9:00 AM	Dial In:(888) 359-3610, Passcode 3960882	
NRG Yield	NYLD	08/04/2015 Unspecified	08/04/2015 9:30 AM	Dial In:(877) 402-8188, Passcode 83049990	
Pattern Energy Group	PEGI	08/04/2015 Unspecified	N/A		N/A
TerraForm Power, Inc.	TERP	08/06/2015 Unspecified	N/A		N/A
Transalta Renewables	RNW-T	07/28/2015 Unspecified	N/A		N/A

Source: FactSet

The PM Summary of YieldCos/SolarCos

- **8Point3 Energy Partners:** Shares have stumbled out of the gate following the IPO (\$21 Pricing) and the focus will likely be on management's commentary on its first public earnings call. Management has touted its more investor friendly IDRs as a positive vs peers but could CAFD seek to accelerate growth in the first inning given the weakness?
- **Hannon Armstrong Sustainable Infrastructure:** HASI has been far and away the biggest winner of the YieldCos we track with over 40% gains YTD. With its quarterly update we look for more of the same as management continues to diversify into renewables and tax equity as it pursues more attractive risk/reward opportunities.
- **NextEra Energy Partners:** It appears that NEP got caught in the NEE/Oncor frenzy which caused shares to get bid up to a new high \$47 in early June but have fallen back down to earth. Management opened the door to third party M&A at its Analyst Day earlier this year but to date has stayed on the sidelines with SunEdison/TerraForm Power and NRG Yield stealing the limelight. Although NEP has the strongest cost of capital out of the YieldCos, we look for answers as to why management has shied away from deal making.
- **NRG Yield:** Despite successfully navigating the stock split/recapitalization earlier this year, this has been the worst performing YieldCo we track at -9.6% YTD. NRG Energy has guided to \$600Mn of drop-down proceeds from its NYLD drop-downs in 2015 (split evenly between 2Q and 4Q) but that roadmap was provided before YieldCo shares tumbled 15%+. We look for enhanced clarity on the near-term drop-down strategy as issuing equity below \$20/sh might not be ideal; however, with NRG Energy under similar pressure, the capital could be used to repurchase parent shares. We expect to see NYLD rely on the revolver more at these levels.

- **SunEdison:** More accelerated expansion into the cost-heavy DG side of the business with Vivint Solar (VSLR) has been met with a negative stock reaction but we see sentiment reversing as management better articulates the cost side of the business. The valuation debate on the Global side of the business is also likely applying further downward pressure on the parent.
- **TerraForm Power:** TERP has taken its lumps along with the YieldCo space but the reaction to the VSLR deal has been somewhat surprising. Also as we mentioned above with NRG Yield, is there a level of TERP where SunEdison opts to defer drop-downs to preserve equity value at the YieldCo?

Figure 3: 2Q15 and YTD Performance

BENCHMARKS	Ticker	2Q15 Return	YTD Return	RSI (14Day)	
S&P500	SPY	0.1%	3.4%	56.6	
Global X YieldCo ETF	YLCO	-5.1%	-13.3%	21.4	
Guggenheim Solar ETF	TAN	-13.0%	5.6%	39.5	

YIELDCOs and MLPs	Ticker	2Q15 Return	YTD Return	RSI (14Day)	2Q Consensus
Abengoa Yield PLC	ABY	-8.3%	12.8%	25.8	\$152
8Point3 Energy Partners	CAFD	NA	-18.7%	22.7	\$2
Dominion Midstream Partners	DM	-5.9%	-9.3%	28.1	\$20
Hannon Armstrong Sustainable Infrast.	HASI	10.7%	49.8%	74.7	\$0.26
Pattern Energy Group A	PEGI	-3.1%	7.3%	20.9	\$70
Tranaslta Renewables	RNW-CA	-2.1%	10.2%	45.5	\$51
TerraForm Power	TERP	-0.7%	20.5%	36.0	\$102
NextEra Energy Partners, LP	NEP	-10.3%	12.2%	20.4	\$99
NRG Yield Inc.	NYLD.A	-9.7%	-9.6%	24.9	\$193
Average		-3.7%	8.4%	33.2	

SOLARCOs	Ticker	2Q15 Return	YTD Return	RSI (14Day)	2Q Consensus
First Solar Inc.	FSLR	-22.8%	-4.2%	39.1	\$0.34
SunPower Corp.	SPWR	-8.0%	-0.8%	35.2	\$0.18
SunEdison Inc.	SUNE	19.2%	34.8%	35.9	-\$0.48
SolarCity Corp.	SCTY	6.1%	0.4%	54.5	-\$1.57
Vivint Solar Inc.	VSLR	1.5%	71.3%	77.7	-\$0.61
Average		-0.8%	20.3%	48.5	

Source: FactSet

Is The YieldCo Glass Half Full?

The average YieldCo 2015E yield has increased 10bp to 5.6% from the end of 1Q15 and is up 20bp YoY but is still below the long-term average of 5.7%. The spread vs US Treasuries has held resistance at the 2% level only briefly breaching it in June 2014, indicating that thus far investors are demanding a minimum 200bp premium over treasuries as a YieldCo risk premium. In contrast, regulated utilities trade at only a 60bp premium today. As interest rates rise we would expect investors to request higher yields on YieldCo investments and the key will be whether the spread widens.

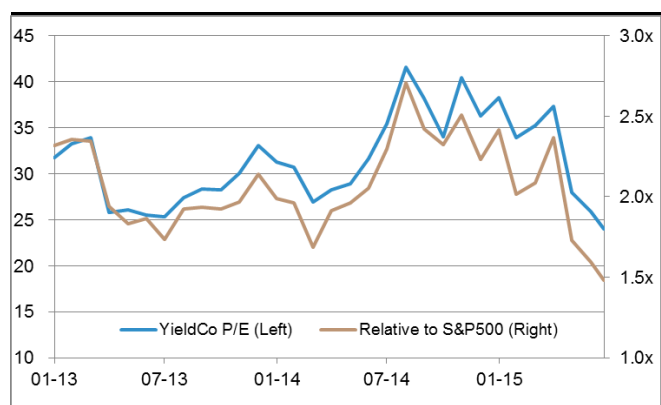
YieldCos are trading at a 200bp premium to 30Yr UST. In contrast, regulated utilities trade at only a 60bp premium today.

Reaching another step in maturation

As the YieldCos mature and earnings grow, we have seen a continued negative trend on P/E's with the ratio contracting to ~24x from 37x at April 30. This movement will likely continue as sponsors execute expected drop-downs that increase earnings without impacting valuation (already priced into the yield assumption). Although we do not value YieldCos on a P/E basis for precisely this reason, the decline towards a more reasonable range is viewed as a positive for the group as comparisons with the S&P 500 (16x) and utilities (15x) become less extreme. *Once YieldCos have reasonable P/E's and dividend yields above those of peer utility assets, there could yet be a migration in the ownership towards longer-term income oriented investors including retail.*

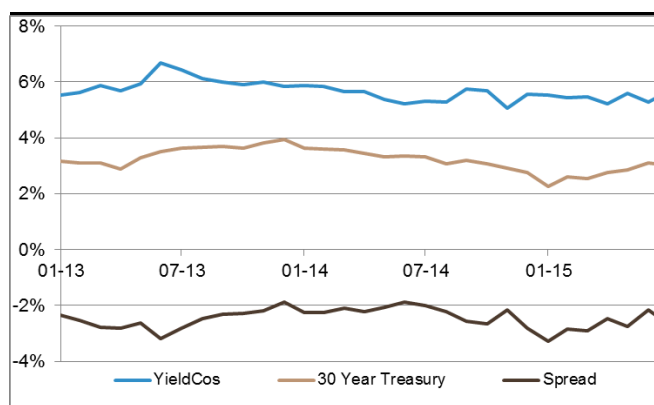
Continued rationalization of YieldCo P/E ratios should help draw more investor interest to the space.

Figure 4: YieldCo Absolute and Relative P/E Ratios



Source: FactSet

Figure 5: Relative Yields: YieldCo vs 30 Year Treasuries

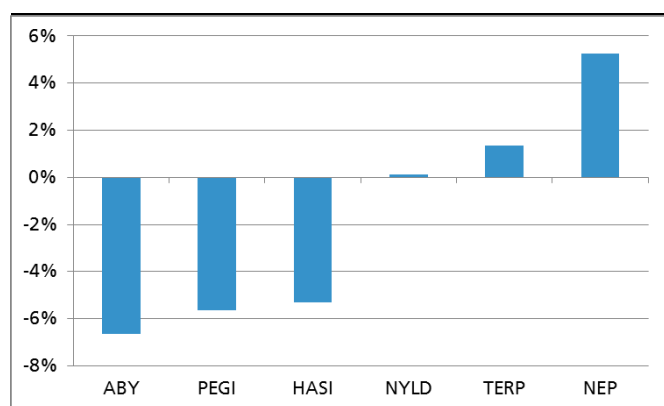


Source: FactSet

Single Stock Correlations

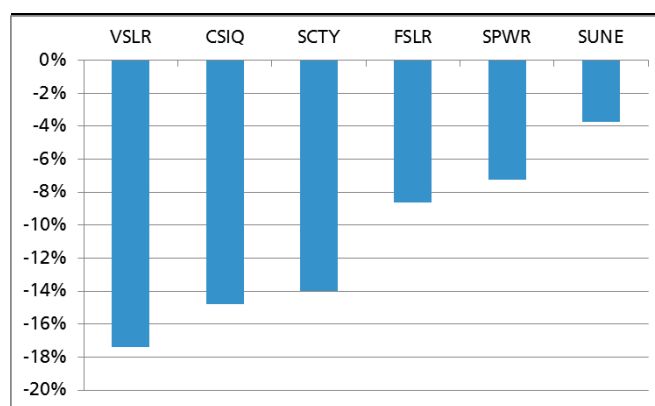
Below we present correlations for YieldCos and Solar stocks although there is a limitation given the short trading history. For example, TERP and NEP have both appreciated over their short trading histories despite interest rate movements.

Figure 6: YieldCo Correlations: Change in Value for 1% Increase in US Treasuries



Source: FactSet

Figure 7: Solar Correlations: Change in Value for 1% Increase in US Treasuries

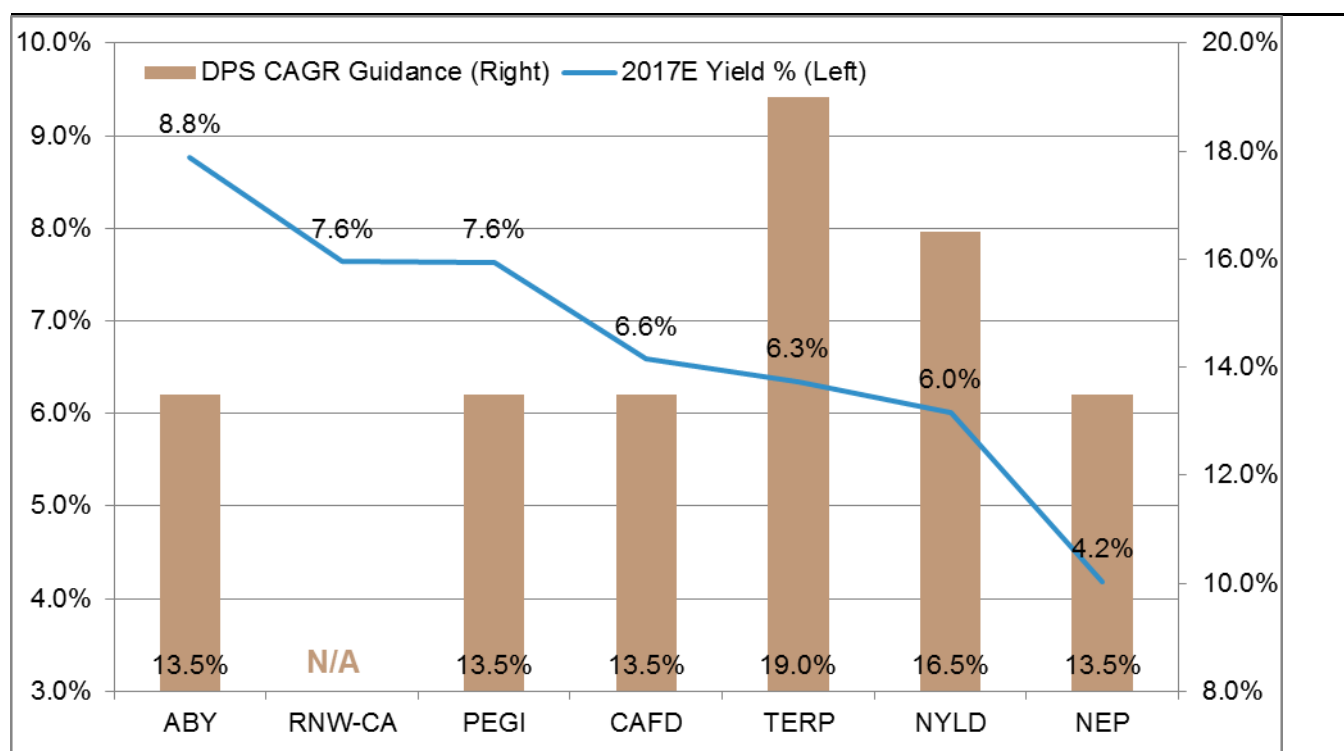


Source: FactSet

YieldCos: How Do They Stack Up?

In 2015 Abengoa Yield has experienced the most yield compression from ~9.5% down 8.8% (was below 8% as recently as last week but is still the highest yielding YieldCo we track with a DPS growth target on the low-end of peers. Pattern Energy Group and TerraForm Power both saw similar yield improvements as well with each company recently increasing their DPS growth guidance; however, much of the gains have been lost recently. In the last two weeks we have seen broad-based declines with the yields on TERP (+110bp), ABY (+90bp), PEGI (+80bp), and NYLD (+50bp) expanding significantly as shares have underperformed.

Figure 8: YieldCo Comparisons (2017E %)



Source: FactSet and Company Filings

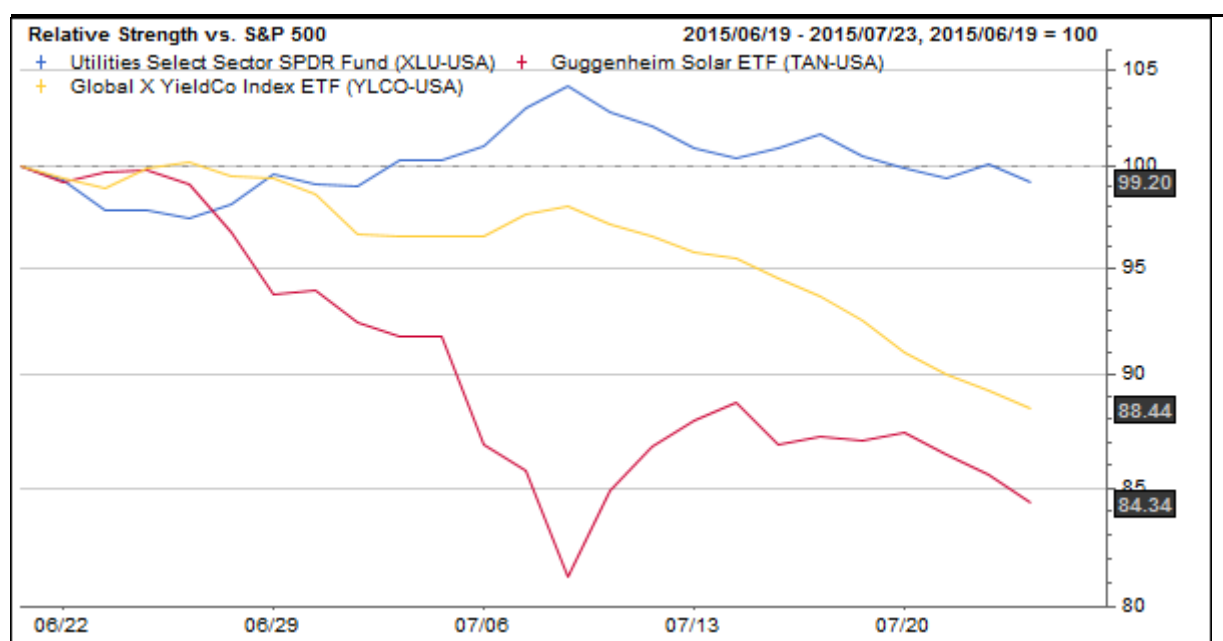
Who deserves the better Yield: TERP or NYLD? This is one of the most asked questions from investors and has been changing significantly by the day. The catalyst in late June that caused NYLD to decline was the financing activity where the market reacted negatively to the 24.5Mn secondary equity offering. Shares were trading at ~\$24.50 before the offering which ultimately priced at \$22; the declines have continued since then and are trading below the December 2014 lows (\$20.50). TERP enjoyed a slightly lower yield than NRG Yield for weeks but it was ultimately short-lived with TerraForm Power tumbling recently.

As we wrote in our TERP launch we expected the yield on TERP to converge with NRG Yield as in our view the higher growth of TERP compensates for the lack of asset visibility. Since then TERP has enhanced its visibility with the net-930MW Invenergy deal and additional backlog/pipeline additions at SunEdison. We continue to see TERP as our preferred YieldCo risk/reward and recent M&A successes only bolster our conviction. Further details are available in our company sections for TerraForm Power and NRG Yield.

YieldCo ETF loses ground while solar continues to slump

Since the formation of YLCO, the ETF has declined ~13%, underperforming the broader utilities group over that horizon but solidly beating the solar group which has struggled.

Figure 9: Utilities, Solar, and YieldCo ETFs Relative to S&P 500 – May 28 (Creation of YLCO) through mid-July



Source: FactSet

Thirsting for Liquidity

Over the last ten months we have seen a ~60% increase in the public float of YieldCos while the market cap has only expanded 20% during that time period, indicating to us that the latest pullback in shares may in part be a reaction to the latest capital markets activity (TERP, NYLD, PEGI, etc.) as investors are forced to reduce their stake in one YieldCo simply to make room for another.

Figure 10: Comparison of YieldCo Float

YieldCo	Shares Float (Mn)	Yield (2016E)	Price	Public Float (\$Mn)	Total Market Cap	Public Float %	30 Day Avg
ABY-US	30.8	8.6%	\$28.89	\$888	\$2,311	38%	615,101
PEGI-US	51.5	7.9%	\$23.70	\$1,221	\$1,641	74%	1,162,097
RNW-CA	51.8	7.2%	\$12.26	\$636	\$2,339	27%	101,714
CAFD-US	20.0	6.6%	\$16.81	\$336	\$1,194	28%	1,269,546
TERP-US	60.7	6.2%	\$32.60	\$1,978	\$4,752	42%	1,801,300
NYLD.A	93.5	6.0%	\$19.48	\$1,821	\$2,852	64%	2,152,109
NEP-US	18.4	4.2%	\$35.59	\$656	\$2,669	25%	156,079
Total YieldCos		6.7%		\$7,537	\$17,758	42%	7,257,946

Source: FactSet, Company Filings, and UBS Estimates

What is The Street's Favorite YieldCo?

After numerous YieldCo initiations during the quarter we check-in on which names have seen a disproportionate level of favorable reviews. The focus on YieldCos continues to grow as evidenced by the number of analysts covering TERP increasing from six in March to eleven today. There continue to be zero sells across the entire YieldCo space.

Figure 11: Sell-Side Ratings for YieldCos – Coverage Keeps Expanding

YieldCo	Average Rating	# Buys	# Neutrals	# Sells	% Buys
PEGI	Buy	11	2	0	85%
TERP	Buy	9	2	0	82%
NYLD.A	Buy	10	3	0	77%
ABY	Buy	3	2	0	60%
NEP	Buy	9	7	0	56%
CAFD	Hold	2	2	0	50%
RNW-CA	Hold	2	4	0	33%

Source: FactSet (7/15/15)

2Q15 Themes:

We include key issues likely to face YieldCo and Solar companies into 2Q results.

How to solve the drop-down circular error: Relying on the revolver?

Following the tumble in YieldCo shares as of late, we question whether Sponsors will still opt to finance their drop-downs with equity in the near term. As Sponsors and YieldCos decline, YieldCo investors are cautious that the Sponsors could initiate drop-downs and dilute their ownership and weaker pricing whereas Sponsor investors are concerned that hesitation on drop downs will reduce the flexibility to return capital to shareholders. We see possible solutions including (1) increased reliance on the corporate revolver; (2) utilizing a greater mix of debt financing; and/or (3) deferring drop-downs in the hope that shares recover. We have seen examples of increased revolver utilization in the past as a bridge between drop-downs as YieldCos attempt to minimize the volume of equity market raises. In particular, NRG Yield used its most recent equity issuance to pay down revolver obligations so now has additional latitude to lean on the revolver to delay equity issuances further if necessary. Revolver financing would likely be a preferred choice of companies as it is temporary but applying holding company debt is less reversible. Not all companies have the leeway in their debt metrics (net

debt/CAFD generally) to significantly increase holding company debt so this option is less likely to be used. A third option is to simply wait for a more favorable price to the extent possible. Most of the YieldCos have a solid buffer built into their payout ratios and could simply lean on that lever (i.e. increase payout ratios closer to ~85%/90% in the short term to finance distributions. The drawback of this approach is that it does not facilitate the recycling of capital at the sponsor. For example, in this scenario NRG Yield would not send capital back to NRG Energy which the sponsor could use for share repurchases.

SUNE/ TERP led 2Q15 re: project acquisitions, awards, development

As we highlight below, the SUNE family dominated M&A activity in 2Q15. Clearly indicative that 2Q15 was not a fluke, significant acquisitions have been announced in July as well, culminating in the VSLR deal (please refer to the SUNE section for more info on the VSLR deal). We don't see an end in sight for SUNE's M&A activity, supported by SUNE management's sentiment that they are currently only a blip on the radar in the 'energy' realm, and are planning to be a leader in not only the renewable space but the energy development segment more broadly.

As seen below, SUNE/ TERP announced deals for nearly 6 GW of operating or ROFO assets in 2Q15. Comparatively, NRG had the second highest total at ~1.9 GW. We do note that SUNE/ TERP supply press releases for all deals and developments whereas players like NRG and NEE are generally more conservative about projects under development.

Figure 12: SUNE Project Announcements in 2Q15

Date	Acquirer	MW	Location	Type	Status	Counterparty/ Description
June 29	SUNE/TERP	521	Idaho, OK	Wind	Acquisition	Closing of Atlantic Power acquisition: operating
June 25	TERP	9	US	Solar	Acquisition	Duke Energy Renewables: operating DG solar
June 16	SUNE	242	India	Wind	Acquisition	Continuum Wind Energy: operating wind projects
June 16	SUNE	170	India	Wind	Acquisition	Continuum: wind assets under construction
June 16	SUNE	1,000	India	Wind	Acquisition	Continuum: wind power plants in development
June 16	SUNE	243	Central America	Wind	Acquisition	GME: 4 operating wind power plants
June 16	SUNE	82	Central America	Solar	Acquisition	GME: operating solar power plant
June 4	TERP	23	US	Solar	Acquisition	Integrus: utility-scale solar
May 7	SUNE	336	Brazil	Wind, hydro	Acquisition	Renova portfolio: operating
May 7	SUNE	149	China	Wind	Acquisition	Honiton portfolio operating
May 7	SUNE	102	India	Wind	Acquisition	FERSA portfolio: operating
May 7	SUNE	73	Peru	Hydro	Acquisition	LAP portfolio: operating
May 7	SUNE	38	India	Solar	Acquisition	Chint portfolio: operating
May 7	SUNE	34	South Africa	Wind, solar	Acquisition	SA portfolio: operating
May 7	SUNE	26	Uruguay	Solar	Acquisition	Solarpack portfolio: operating
May 7	SUNE	2,206	Brazil	Wind, hydro	Acquisition	Renova portfolio: ROFO
May 7	SUNE	120	Peru	Hydro	Acquisition	LAP portfolio: ROFO
May 5	TERP	25	Ontario, Canada	Solar	Acquisition	Invenery: operating utility-scale solar
TOTAL		5,399				
June 8	SUNE	371	South Africa	Solar	Awarded	5 solar PV projects (REIPPP) awarded
May 21	SUNE	33	Southern CA	Solar	Awarded	Contracts awarded for rooftop solar, 17 plants operational in 2016
May 6	SUNE	86	South Africa	Solar	Awarded	Awarded (REIPPP Programme)
TOTAL		490				
June 16	SUNE	246	Central America	Wind	Under development	Wind under development
May 28	SUNE	14	Long Island, NY	Solar	Under development	Signed agreements for 7 solar power plants
May 12	SUNE	3	Alameda County, CA	Solar	Under development	Agreement to install solar systems, part of second phase of R-REP
April 22	SUNE	3	Winchendon, MA	Solar	Under development	Signed agreement to develop and install power plant
April 9	SUNE	262	Utah	Solar	Under development	Signed agreement to construct and install 3 utility-scale power plants
TOTAL		528				
Grand Total		6,417				

Source: Company Filings

Figure 13: CAFD, FSLR, & SPWR Project Announcements

Date	Acquirer	MW	Location	Type	Status	Counterparty/ Description
June 19	CAFD	262	US	Solar	Acquisition	FSLR: initial portfolio dropdown
June 19	CAFD	170	US	Solar	Acquisition	SPWR: initial portfolio dropdown
June 19	CAFD	630	US	Solar	ROFO	FSLR: ROFO assets
June 19	CAFD	386	US	Solar	ROFO	SPWR: ROFO assets
June 19	CAFD	20	Japan	Solar	ROFO	SPWR: ROFO assets
June 19	CAFD	100	Chile	Solar	ROFO	SPWR: ROFO assets
Total		1,568				
June 15	FSLR	200	Nevada, US	Solar	Under Development	Preliminary 'nod' from NV PUC
Total		200				
Grand Total		1,768				

Source: Company Filings * SPWR evenly split the June 15th announcement with FSLR

As seen below, NRG acquired ~1.9 GW of projects, and announced the development of a 20 MW project for Cisco. We feel that, specifically for NRG and NEE, these companies do not announce every deal that they have under development, contrasting with how SUNE operates.

Figure 14: NRG Project Announcements

Date	Acquirer	MW	Location	Type	Status	Counterparty/ Description
June 18	NRG Yield	138	CA, US	Solar	Acquisition	GE: operating assets
May 5	NRG Yield	62	CO, US	Wind	Acquisition	Invenergy: operating assets
April 13	NRG Yield	900	US	Wind	ROFO	NRG: operating assets ROFO
April 13	NRG Yield	900	US	*Natural Gas	ROFO	NRG: operating assets ROFO
Total		1,862				
June 23	NRG Renew	20	CA, US	Solar	Under development	Will develop project for Cisco
Total		20				
Grand Total		1,882				

Source: Company Filings

NEE was active in the wind market via 664 MW in acquisitions and 200 MW of new project development, via a PPA deal with Westar.

Figure 15: NEE Project Announcements

Date	Acquirer	MW	Location	Type	Status	Counterparty/ Description
May 13	NEP	664	US	Wind	Acquisition	NEE: Operating
Total		664				
May 27	NEE	200	KS, US	Wind	Under Development	PPA deal signed with Westar
Total		200				
Grand Total		1,064				

Source: Company Filings

Below, we compare the M&A and development activity between the SUNE family, CAFD and its partners, NRG, and NEE.

Figure 16: 2Q15 Project Acquisitions & Development Comparison

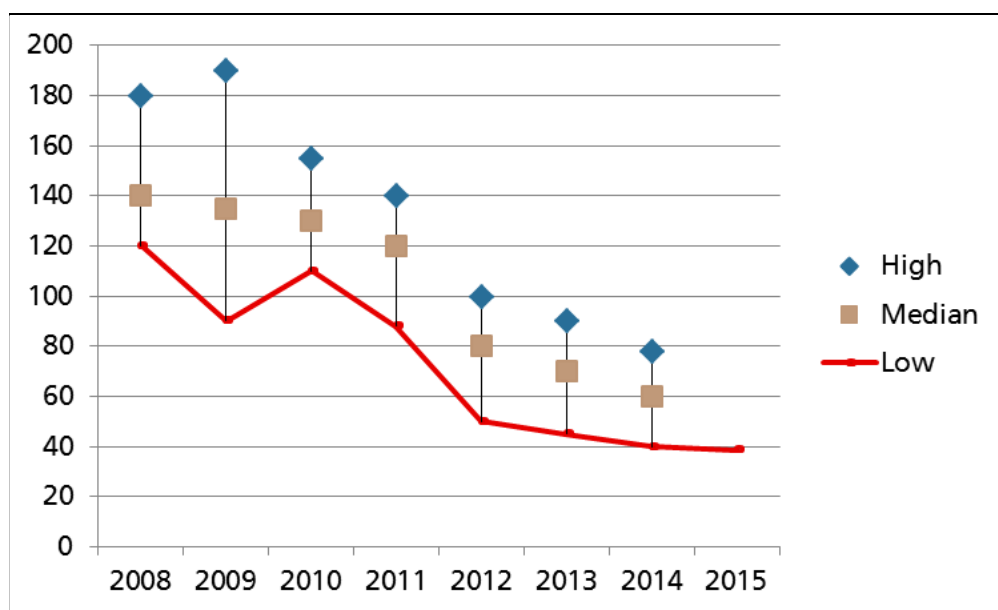
Parent Co	MW
<i>Acquisitions</i>	
SUNE	5,889
SPWR+FSLR	1,568
NRG	1,862
NEE	664
<i>Under Development</i>	
SUNE	528
SPWR+FSLR	200
NRG	20
NEE	200

Source: Company Filings

How low will solar PPA prices go in the near term?

As seen in the chart below, utility-scale solar PPAs decreased dramatically between 2008 and 2012, from ~\$120/MWh levels to roughly \$70-\$80/MWh on average. Prices have flattened out a bit since 2012 in the ~\$60/MWh region, with most of the large-scale projects out west signed sub-\$60/MWh in the past two years. While the FSLR project, highlighted below, broke the \$40/MWh threshold, the 3% annual escalator skews the price back to the ~\$50/MWh range on average over the life of the contract. We expect PPAs to remain in the \$40/MWh-\$50/MWh range over the next two years, as cost/Watt declines could be offset by ITC and rate increase pressures.

Figure 17: Utility-Scale Solar PPA Trend



Source: GTM, Company Filings

Setting the new standard for utility scale solar PPAs at below \$40/MWh

NV Energy's record low 20-yr PPA with First Solar (FSLR) for 100 MW Playa Solar 2 project in Nevada for \$38.7/MWh has established a new first year low for a signed PPA without meaningful state tax credits, albeit with a 3% cost inflator. The agreement affirms FSLR's target to reach sub \$1.00/Watt fully installed costs by 2017, although actual targeted costs were not disclosed. The committed dispatch implies a capacity factor for the project of 35%, at the very high end of what we've observed.

Similar SunPower Deal puts FSLR's PPA in perspective

While the \$38.7/MWh is much acclaimed and at first glance signals a new era of PPA prices, the embedded 3% annual escalator brings it back to reality. In comparison, NV Energy has also signed a deal with SunPower for the 100 MW Boulder Solar project, which has a fixed 20 yr. PPA of \$46.0/MWh (Docket 3615). Over the life of the 20 year contract, the \$38.7/MWh averages out to \$50.8/MWh, bringing the record low near apples to apples with the \$46.0/MWh offered by SPWR. Here too, the project implies a robust 33% capacity factor.

Expectations growing on community solar

With residential solar offering savings on utility bills in many regions, demand for rooftop solar is on the rise. Having said that, there are many factors preventing potential customers from going solar, including: renting property, living in an apartment complex, low credit scores, shaded roofs, roofs facing the wrong direction, and affordability, among others. Community solar looks to bypass many of those hindrances by allowing customers to 'rent' capacity in a solar project, and receive credits to utility bills based on the system's production, in regions/ utility service areas that allow. We feel that the market for community solar is significant, and expect many utilities will adopt programs as it allows them to keep their customers, whereas resi rooftop solar essentially equates to a customer leaving the utility and paying the solar company monthly electricity bills.

Receiving net metering credits without a panel on your roof

We see Community Solar as an extremely potent opportunity to sell 'Net Metered' solar to individual customers who might not qualify (renter, apartment, inappropriate roof, etc.) at the economics of near-utility scale cost structures. Virtual net metering allows for multiple customers to participate in the same metering system and share the output from a single facility that is not physically connected to their property/meter. These customers buy a 'share' of the facility and thus own any number of panels in the community solar project that they wish to according to their needs (rather than the size of their roof or minimum financing criteria etc.).

Flat rate in virtual net metering vs. volumetric rate

The key here is that unlike a full-fledged net metering program, the rate of credit is not volumetric; instead the project owner captures a proscribed tariff for their project which is applied ratably back to the customer's bill in accordance with their ownership stake. These bill credit rates are typically in the \$0.06-\$0.07 range (although they can be in the high teens in places like Massachusetts). All-in, the community-solar programs appear more analogous to utility-scale deals, with risks related to limits on the applicability of the respective tariff regimes. Notably,

customer savings under the applicable tariffs appear to demand a minimum ~5.5% return.

Economies of scale vs resi rooftop allow access to efficient capital

Average sized facilities are in the 1-2MW range, which is smaller than a utility scale project but much larger than a rooftop resi installation (~6KW). This allows for funding via project finance, and the ability to leverage tax equity with a portfolio because the asset is contracted with a utility. A major player in the space, Clean Energy Collective (CEC) estimates that a community solar project might be 30% to 50% less costly than an onsite solution (economics further boosted by contracts where they are selling at retail prices). The ability to tap more efficient sources of capital might indeed be the secret sauce that underpins further growth in this market, compared to other distributed generation assets that are dependent on personal financing.

Commercial market still immature in comparison

Although many groups are bullish on the outlook for the commercial market, we still see there being significant barriers to the market taking off to match its potential. The main issue that we continue to see is credit, as the lack of a FICO score comparison on the C/I side leads to diligence costs for projects to be on the same level as they are at the utility-scale, which hurts the economics of the projects.

While there are efforts to make the process more efficient, like commercial PACE for example, we believe the market is still a few years behind utility and resi. Having said that, developers and installers clearly see the opportunity that lies behind the 'lack of evaluation standardization' shield, resulting in some major announcement by the main players re: commercial market development. Our view is that the commercial market evidently has its growing pains, but it has the potential to take off once project evaluation from the financiers' side becomes more efficient, which is demonstrated by the key players below positioning themselves to be ahead of the market.

Figure 18: C/I Developments by Main Players

Company	Development
SolarCity	Announced and launched \$1B fund for commercial projects. Is expected to support the installations of 300 MW in projects (\$500Mn from Credit Suisse)
SunEdison	Partnership with commercial storage provider Green Charge Networks to install solar + storage projects
SunEdison	50 MW C/I storage deal with Southern California Edison
Vivint	\$150 Mn investment fund announced, in a partnership with an unnamed EPC along with other investors.
NRG	\$100 Mn partnership between NYLD and NRG to invest in DG solar assets

Source: Company Filings

Resi players expect costs to reach the \$2.50/W level by 2017

As seen below, SCTY is the resi industry leader from a cost perspective, based on the resi installers that have released their cost roadmaps. As costs are highly dependent on scale, we trust that no private companies are beating SCTY from a cost perspective, further boosted by the fact that the 2nd largest resi installer, Sunrun, noted their 1Q15 installation cost was \$2.52/W, placing them above VSLR for the previous quarter's filings.

SCTY and VSLR both believe that total installed costs will reach the \$2.50/W level by 2017, and with VSLR joining SUNE and benefitting from their new parent's increased scale, they could very well be dropping their cost forecasts as they look to leapfrog SCTY and Sunrun into the top spot.

VSLR's interim guidance for 2015 is \$2.50-2.70/W.

Figure 19: Cost Comparison between Residential Installers

	SCTY			VSLR			NRG Home Solar	
	1Q14	1Q15	2017e	1Q14	1Q15	2017e	2015e	2017e
Installation Cost	2.46	\$2.09	\$1.90	\$3.00	\$2.32			
SG&A	0.74	\$0.86	\$0.60	\$1.25	\$0.89			
Total Cost	\$3.20	\$2.95	\$2.50	\$4.25	\$3.21	\$2.50	\$3.26	\$2.83

Source: Company Filings, UBSe

Where will the cost drops come from?

Through our discussions with many players at different areas of the value chain, we believe that the costs will decrease on the equipment, soft cost, and SG&A levels. In terms of **SG&A**, rapidly growing companies representing the top 5 installers have had to ramp up sales teams in order to keep up with the increased demand and solar's economic viability in new markets. This has resulted in a bump in SG&A, which is expected to be forced down as sales teams ramp up. Installers commonly note that it takes a salesperson ~6-12 months to reach a point of consistent production. Additionally, as rooftop solar continues to grow, customer awareness will increase, minimizing sales costs as customers will approach installers and sales cycles are reduced.

On the **equipment side**, there is still room for costs to go down, with module prices expected to push to the low \$0.60s/W, and even into the high \$0.50s/W in the next ~3 years. Prices have remained in the high \$0.60s/W over the past ~yr, mainly due to the US-China tradecase, but we believe technological advances will start pushing prices down in 2H16. We see inverters dropping below \$0.20/W and \$0.10/W in the residential and utility sectors respectively over the next year as well. Additionally, mounting costs are being driven down on the residential side as new technologies are introduced. Installation costs pertaining to mounting make up ~40% of total installation costs, and the new technologies that are being introduced are rackless, which reduce installation time and thus costs.

Soft costs are more difficult to forecast as they vary greatly by municipality, but as a general trend we believe these are being pushed down as municipalities become more comfortable with solar, which will decrease permitting costs and inspection requirements.

Residential Retail Sector Update

On July 22, Sunrun set the terms for its planned IPO, announced June 25. The company will list on NASDAQ under "RUN" and plans to sell 17.9m shares (2.685m over-allotment shares) at \$13-\$15/sh, in order to raise \$232.7-\$308.8m.

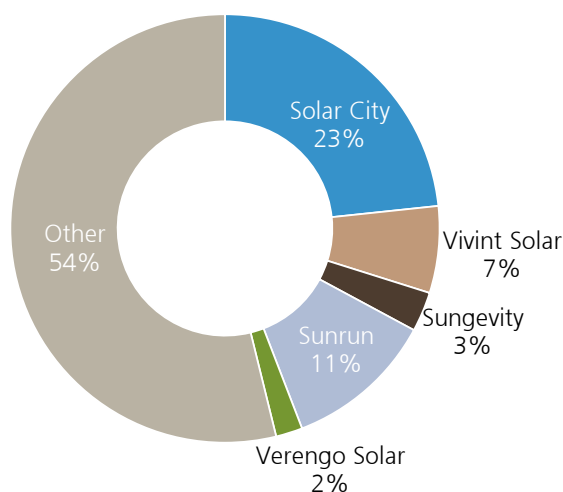
Sunrun is a CA-based resi solar co, competing in all areas of the solar value chain, either directly or through its partners/subsidiaries. Directly, Sunrun engages in lead-gen, installations (REC solar), financing, monitoring, and sales, but also outsources some installation and sales activities to its partners. Active markets include: OR, CA, NV, AZ, CO, MD, NJ, PA, NY, CT, MA, HI, SC, and NH.

Products Offered:

- **Lease/PPA:** Sunrun offers lease and PPA products, but doesn't offer customers the option to choose between the two (as SCTY does) as the products are location-based. With the PPA, the customer pays a fixed price for system production (typically starting \$0.14/kWh, with 2.9% escalator). With the lease, the customer pays a fixed monthly charge. In both cases, Sunrun owns the system and covers any operations & maintenance costs. For both products, Sunrun offers zero-down, fully-prepaid, and \$1-3k upfront options.
- **Ownership:** Customer buys the system outright from Sunrun.
- **BrightAdvantage Loan:** Enables the customer to finance the purchase of a solar system through Sunrun's bank partners.

In 2014, Sunrun was the second-largest player in the residential solar market, with 11% share of total cumulative resi installations (MW). As of Q1, cumulative deployments stood at 430 MW (up from 393 MW in 2014 and 264 MW in 2013). Mgmt estimates that net retained value as of Q1 is \$1.1B (from \$1.0B in 2014 and \$0.6B in 2013), while estimated nominal contracted payments remaining are worth \$1.7B (from \$1.6B in 2014 and \$1.0B in 2013).

Figure 20: Leading U.S. Residential Solar Players – 2014 Cumulative MW



Source: GTM/SEIA, UBSe

US/ China tradecase update

Review of 2012 tariffs more punitive than expected

After preliminary recommendations of tariffs at roughly 18% for Chinese manufacturers were announced in January, the DOC has reversed that decision in their July administrative review, opting for tariffs in the mid-20s%-low 30s%. Conversely, while the tariffs are higher than the previous recommendations, they are lower on average than the previously enforced duties. Yingli (YGE), for example, received the lowest tariffs of 21.73% down from 29.18%, but most other players have seen their rates drop more modestly and stay in the high 20s% ranges.

Tradecase goes both ways...

Although obtaining less coverage than the US imposed tariffs on Chinese solar panels, China set tariffs on polysilicon importation from the US, EU, and South Korea in late 2014, in a move that could begin to be impactful in the 2H15 (when imports from agreements placed before the tariff was set start to taper). The US manufactures a significant portion of the polysilicon that gets exported to China and is used in the solar panels, and with tariffs of up to 57% on poly imports from the US, the price of poly could be pushed up—deriving from the fact that Chinese poly manufacturers don't expect they will be able to keep up with domestic demand.

California Legislative Updates

CA tier reform

The highly debated 2-tier rate reform in CA was approved at a July 3rd vote by the CPUC. Tiers 1&2 will compress as will tiers 3&4. The consequences of the approval will be a 25% variance between the 2-tiers, as well as a surcharge for the highest (using over 400% of the average residential usage in CA) electricity users. Low-income customers qualify for discounts outside of the tiered structure.

The reforms, which were more similar to the Picker than the Florio proposal, outlined the transition that the reforms will take until full enforcement in 2019. The compromised plan between Picker and Florio was publicly endorsed by Florio.

- 2015: 4 tiers will remain but pricing will compress
- 2016: tiers cut to 3, difference between highest and lowest tiers will be 76%
- 2017: down to 2 tiers, 49% range between pricing
- 2018: 44% gap between tiers
- 2019: 25% gap between the 2 tiers

The decision effectively brings the lowest tier pricing up, and the highest tier pricing down, as well as enacts the contentious minimum bill of \$10/mo. The reforms will be gradually implemented through 2019, with the minimum bill set to be enacted in 2015 as one of the first aspects of the revisions to be applied.

The vote has been seen as a win for the utilities and the customers previously in the highest tiers who are seeing their rates decline, but a loss for the lower tier customers. In terms of the impacts on residential PV adoption, with the majority of the solar installations being done by the tier 3&4 customers, the reductions in their

The CPUC voted in favor of the 2-tier structure, with a range in pricing between the tiers of 25%

Rates will remain quite attractive for solar vendors at or above 20c/KWh

The next policy question in California shifts to fixed tariffs

bills is seen by some to be a cause for concern for solar. We don't quite buy that, given that even with the reductions, rates in CA are still some of the highest in the country, and as long as the economics still work and resi PV can still provide savings on the utility bill, adoption rates in the top tier will not be curtailed. Conversely, the bump in rates for the lower tier could incentivize lower-income customers on the border of being able to go solar to pursue it, as significant increases to their electricity bills will be more impactful.

Below, we highlight the current structure as well our predictions on what the new rates will look like. We flag that the range between tiers will likely be slightly greater than what we note below:

[Link to the document from the CPUC: R1206013](#)

Figure 21: Summary of Current and Reformed California Rate Tier Structures

	SDG&E	PG&E	SCE
2012 GWhs sold (excluding low-income CARE program)			
Tier 1	3,425	13,193	10,132
Tier 2	670	2,455	2,162
Tier 3	1,031	3,477	3,303
Tier 4+	1,391	3,392	4,450
Tier 1	53%	59%	51%
Tier 2	10%	11%	11%
Tier 3	16%	15%	16%
Tier 4+	21%	15%	22%
Predicted % of kWhs sold after tier compression (non-CARE)			
Tier 1	63%	59%	51%
Tier 2	37%	41%	49%
Florio Alternative 3-Tier Decision (non-CARE)			
Tier 1	53%	59%	51%
Tier 2	26%	26%	27%
Tier 3	21%	15%	22%
Tier definitions % of baseline usage (current)			
Tier 1	100%	100%	100%
Tier 2	101%-130%	101%-130%	101%-130%
Tier 3	131%-200%	131%-200%	131%-200%
Tier 4+	>200%	>200%	>200%
Baseline is set at a % of average overall residential consumption			
% of average	55%	55%	53%
Tier definitions % of baseline usage (Proposed Decision)			
Tier 1	100%	100%	100%
Tier 2	>100%	>100%	>100%
Tier 3 (Florio Alt)	>200%	>200%	>200%
Current rate structure (\$/kWh; excluding CARE)			
Tier 1	\$0.148	\$0.132	\$0.128
Tier 2	\$0.171	\$0.150	\$0.160
Tier 3	\$0.337	\$0.311	\$0.272
Tier 4	\$0.357	\$0.351	\$0.312
Average	\$0.227	\$0.189	\$0.192
Est. Rate structure 2018 (\$/kWh; Proposed Decision, excluding CARE)			
Tier 1	\$0.241	\$0.195	\$0.199
Tier 2	\$0.289	\$0.235	\$0.241

Source: Company Filings

Battery Storage

We see real interest for batteries – in the C&I and utility markets

We emphasize an improving opportunity to install batteries in utility-scale, and more notably C&I contexts under which incumbent utilities already charge high fixed tariffs. While capacity payments largely remain uneconomic for storage today (highest consistent prices in NYC though does come close today), we see the opportunity as tiering to the C&I opportunity where fixed charges can be even higher in discrete circumstances as well as into the existing utility-scale procurements.

It's all about the fixed tariffs and capacity charges

In sharp contrast to the economics of solar, when net metering and high variable rates dictate the economics du jour of this resource, the complement exists for storage. In this instance, the higher the fixed charge – particularly the peak demand charge/capacity market, the more appealing the product. With many utilities typically fixing their demand charges predicated off peak load, consumers at all sizes tend to be highly incentivized to reduce their peak where possible (fixed portion of C&I bills remain in ~35-40% range).

Storage is similar to solar, circa a decade ago...

We see the opportunity around storage as eerily familiar with solar a decade ago, both in terms of the rapid pace of the cost trajectory through the near term as well as in the context of its properties to offset utility bills. We see solar and storage as direct complements tackling the volumetric and fixed components of the utility bill. While we're clearly not calling for customers to disconnect *en masse* (far from that given disparate reliability products), it certainly chips away at another meaningful value proposition.

What's the cost? Looking at ~\$400/KWh by ~2018

Many of the latest RFPs appear to be pricing in the \$350-450/kWh range (reflecting inverters, etc. but ex-transformer), substantially lower than systems of late in the \$500-700/kWh ballpark. With most systems contemplated to shift peak load (~at 4-hours), this translates to an all-in cost of ~\$1,500/kW.

Who's the real winner here? Solar Devcos and YieldCos

Taking the same playbook from recent years around solar deployment, we suspect independent renewable developers will all diversify their offerings to include battery development efforts to both medium-scale C&I customers, as well as offer grid-scale solutions. It's the very same customers who are likely to engage on cost reduction efforts via storage that the IPPs have engaged with previously. For instance, we see the recent trend to diversify into wind from solar as illustrative of this willingness to expand. We see storage as a further complementary asset class, ultimately expanding the eligible asset class for drop-downs. While AES is the clear market leader in battery deployment, we suspect others will quickly emerge (NRG, SUNE, etc.). Specifically, we suspect SUNE will be among the first serious adopters, and their recent 50 MW project affirms our inclination.

Merchant Transmission for YieldCos

- **Merchant developer beats incumbent in CAISO transmission bid:** CAISO chose a merchant developer, DCR Transmission (a JV between Abengoa Transmission & Infrastructure and Starwood Energy Group) to construct, own and operate the 500-kV Delaney-Colorado River transmission line. This will be a ~114 mile line between Delaney substation in Arizona (to be constructed by Arizona Public Service Co) and Southern California Edison's Colorado River substation in California. According to an initial CAISO estimate the project is expected to cost ~\$300Mn with in-service targeted for 2Q20. The Abengoa JV won against competition from local utility SoCalEd, Duke subsidiary Duke-American Transmission Co, LS Power, and NextEra Energy.

Abengoa Yield currently has over 1,000 miles of transmission assets operating in Peru and Chile (denominated in US Dollars, payable in local currency) and management has stated that transmission assets are ideal for YieldCos

Why was this award key?

Abengoa parent represents the first major award for a transmission developer with a YieldCo subsidiary. The question is to what extent this will prove a new emerging trend for the likes of NEE & NEP? We believe other renewable developers could well *expand* into this niche as well given both the complementary nature it plays for developers (many already need to develop transmission as part of generator interconnection process).

- **LS Power won a previous transmission bid in PJM for Artificial Island.** While this is technically not a FERC 1000 project, this further illustrates the desirability of this asset class.

Incumbents SCE and APS had previously positioned to partner on the project rather than compete head to head, in an effort to win the project over external affiliates – this development could signal a change in tides.

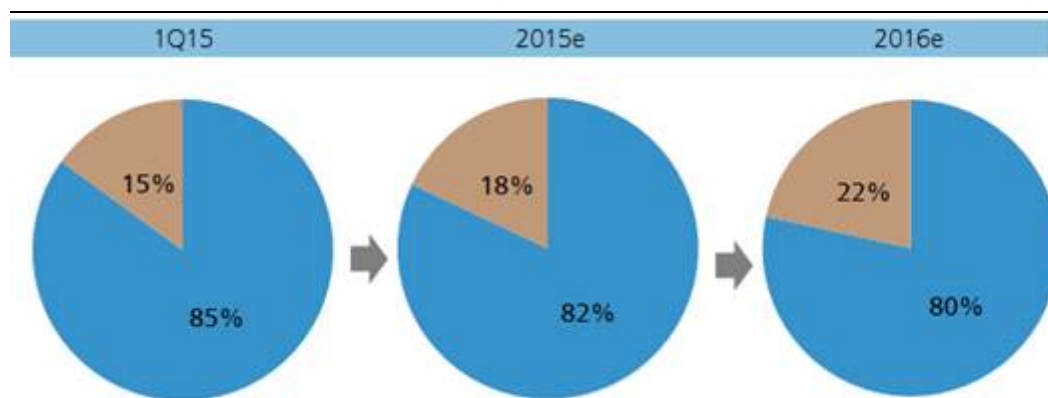
- **Will investors see this asset class as equivalent to a PPA if discretely contracted?** We suspect so, albeit the relative need for cash flow reinvestment and potential for ROE revisions remain the key value discrepancies between remaining relegated to the land of utility valuations vs. being an 'eligible' YieldCo asset.

The Loan vs. Lease Debate has been a hot topic

We link the rising preference for solar loans, where customers buy (and borrow) against the system outright, rather than leasing, to a wider push to keep vendors honest on passing through panel cost reductions rather than dictating prices via discounts off utility bills. With discounts to customers having declined modestly, rather than passing alongside the full benefits of lower solar installation costs, the disparity in savings between owning and leasing systems has seemingly increased meaningfully. According to conversations we've had with industry participants, ~70-75% of customers opt for loans now, when compared side by-side, similar to the ~2/3rds referred to by SunPower on the last 1Q15 conference call. Below, we also show forecasts for break up at Solar City, where the trend also shows rising share for loans. Vivint management has also indicated a desire to increasingly offer customers the ability to buy projects outright at a cost of ~\$4.50/Watt.

Increasing bias to buy instead of lease

Figure 22: Solar City: Breakdown Loan vs Lease



Source: Company sources

Within these sales roughly half are via unsecured loan products, with the balance with more complicated (and cheaper) first- and second-lien products. We expect the cost of financing to become even more competitive as the ability to securitize these loans into securitizations (ABS) becomes pervasive.

Loan vs Lease debate to shift with the ITC step-down

Among the key points in evaluating the trend towards buying via loan in lieu of a lease is the step-down to 0% for the residential ITC, vs. the step-down to 10% for the business ITC at the end of 2016. We see this as an important discrepancy, reflecting the greater need for the ITC at larger utility-scale vs. the net metering subsidies available for smaller residential installations. We suspect this will play out favoring leasing options, which can continue to capitalize on the 10%, vs. the individual who will no longer.

Utility ROFO Selldowns Coming: D & SO?

Dominion: YieldCo selldown coming; expect modest proceeds as D unveils next cash source

We think D is an opportune candidate for ROFO sell down. While the YieldCo partnership should drive only modest accretion to the parent given its limited ability to take advantage of the IDRs, we suspect mgmt will get paid in addition to the sales price, but an upfront fee for offering the ROFO package.

Expect updates first week of September

Who might Dominion partner with on its solar YieldCo?

We would not be surprised if Dominion were to partner with a FSLR-SPWR YieldCo, *rather* than any of the existing YieldCo structures, considering FSLR-SPWR's preferential relationship with large US utilities. We suspect any resulting ROFO arrangement would be structured such that Dominion would receive an immediate cash payment in exchange for providing the ROFO visibility to a YieldCo structure. If this were to eventuate, Dominion would be the second company after SunEdison to have 2 separate drop-down vehicles designed to house different forms of contracted assets.

D could be paid to benefit from its future ROFO portfolio

Figure 23: Dominion's Solar Asset Portfolio

Solar Project	Seller	Capacity (MW)	Location	Deal Status	Announcement Date	Completion Date	In-service Date	Estimated Transaction Value (\$MM)	ISOs	Regulatory Status
Pavant Solar Project	Juwi Solar Inc	50	UT	Completed	NA	11/10/2014	2015	NA	NA	Unregulated
Catalania Solar 2	EDF Renewable Energy Inc	18		Pending	9/15/2014	1H15	2015	175		Unregulated
Cottonwood		24								
West Antelope Solar Park	Canadian Solar Inc.	20	CA	Completed	11/24/2014	11/24/2014	11/24/2014	NA		Unregulated
CID	EDF Renewable Energy Inc	20	CA	Completed	6/19/2014	12/29/2014	4Q14	70		Unregulated
Mulberry Farm Site	Strata Solar LLC	16	TN	Completed		5/7/2014	Late 2014	2	NA	Unregulated
Selmer Farm Site		16								
Kansas Solar Project		20								
Kent South		20								
Old River One Solar Project	Recurrent Energy	20	CA	Completed		3/31/2014	Late 2014 / Early 2015	50	CAISO	Unregulated
RE Adams East Solar Facility		19								
RE Camelot Solar Facility		45								
RE Columbia Two Solar		15								
Somers Solar Facility	Kyocera Corp	5	CT	Completed		10/22/2013	2013	NA	New England	Unregulated
Azalea Solar Power Facility	Investor Group	8	GA	Completed		2/28/2013	2013	NA	NA	Unregulated
Indy Solar I	Sunrise Energy Ventures, LLC	10	IN	Completed						
Indy Solar II		10	IN			7/22/2013	2013	NA	MISO	Unregulated
Indy Solar III		9	IN							
Total		344								

Source: SNL and UBS estimates

Clues on D's bias: Home solutions will sell SunPower modules

While not related to its utility scale business, management at D announced it would partner with SunPower to sell direct to residential consumers solar in NJ.

Southern Company: Selling back what they bought from FirstSolar

Southern Company (SO) is the other major utility candidate which could possibly be selling down to a ROFO pipeline. We see SO as the most likely partner for FSLR-SPWR's forthcoming YieldCo, 8point3 Energy. FSLR has sold several solar projects to SO, we summarize these in the table below, retaining a 50% interest in many; as a result SO will co-own many of these solar facilities with 8point3 Energy once constructed. It now seems that SO may in fact sell these assets back to FSLR, once the applicable tax recapture period has expired (5-year window). This would effectively be equivalent to the contemplated resale of assets Dominion has completed in its portfolio once tax and EPS has been largely extracted.

We suspect FSLR could negotiate with SO to buy back solar assets they had previously sold to feed the 8point3 pipeline

Figure 24: SO: Solar assets acquired from FSLR

Project	MW
SG2 Imperial Valley, LLC (a)	150
North Star Solar Farm in California	60
Macho Springs Solar Power Plant	50
Campo Verde Solar Facility in Imperial County, Calif	139
Cimarron Solar Project	30
Total	429

Source: Company sources

Below we summarize SO's renewables and gas asset portfolios – we flag the bulk of the portfolio comes from these FSLR projects.

Figure 25: SO Power: The *Entire* Renewables Portfolio

Power Plant Name	Owner	Operator	Owned Existing Capacity (MW)	Operating Ownership (%)	Tech	Year First Unit in Service	State/ Province
Adobe Solar Project (Cygnus Solar)	Southern Renewable Energy	Team Solar Inc	18	90	PV Solar	2014	CA
Apex Solar Power Project	Southern Renewable Energy	SunEdison LLC	18	90	PV Solar	2012	NV
Campo Verde Solar	Southern Renewable Energy	First Solar Energy	125.1	90	PV Solar	2013	CA
Decatur County Solar Project	Southern Power Co.	Southern Power Co.	-	-	PV Solar	2015	GA
Decatur Parkway Solar Project	Southern Power Co.	Southern Power Co.	-	-	PV Solar	2015	GA
Granville Solar Plant	Southern Renewable Energy	NVT Licenses	2.3	90	PV Solar	2012	NC
Lost Hills (Lost Hills / Blackwell)	Southern Renewable Partnership	First Solar Inc.	-	-	PV Solar	2015	CA
Macho Springs Solar Project	Southern Renewable Energy	First Solar Development LLC	45	90	PV Solar	2014	NM
North Star Solar I Project	Southern Renewable Partnership	First Solar Energy	-	-	PV Solar	2015	CA
Solar Gen 2 Solar Facility	SG2 Holdings LLC	First Solar Inc.	150	100	PV Solar	2014	CA
Southern Turner Cimarron I Solar	Southern Renewable Energy	First Solar Inc.	27.5	90	PV Solar	2010	NM
Spectrum Nevada Solar Plant	Southern Renewable Energy	NVT Licenses	27	90	PV Solar	2013	NV
Taylor County PV Solar Project	Southern Power Co.	Southern Power Co.	-	-	PV Solar	2016	GA
Nacogdoches Power ST	Southern Power Co.	Southern Power Co.	100	100	Wood Waste	2012	TX
Total Renewables			512.9				

Source: SNL, Company Sources

Weather & Renewable Generation in 2Q

Below is our table on total net generation of electricity from solar and wind sources (YTD April, 2015). Importantly, YTD April, 2015, total wind power generated from all sectors was down by 7%. While net wind power generation from electric utilities was down by 5% (YTD April, 2015) net generation from IPPs was down by 8%. However, net solar generation for the same period from all sectors was up by 60%. Specifically, solar generation from electric utilities was up by 32% and generation from IPPs was increased by 63%.

Wind was down YoY in April despite YoY growth in asset base

Figure 26: Net Generation from Solar and Wind - YTD April, 2015 (GWhs)

Net Generation	All Sectors %			Electric Utilities %			IPPs %		
	Apr-15	Apr-14	Change	Apr-15	Apr-14	Change	Apr-15	Apr-14	Change
Solar	7595	4758	60%	477	361	32%	6954	4267	63%
Wind	63418	68477	-7%	10258	10789	-5%	53093	57641	-8%

Source: EIA

Wind is definitely not blowing from the North

Vaisala Energy, the global environmental and industrial measurement firm recently forecast below normal wind speeds across much of the US going into the final quarter of the year. This is coming after Vaisala's 1Q study that revealed 40-year record low wind speeds in North America. The forecast is particularly disappointing given the already challenged first half of the year for the wind power producers. The below normal wind speeds are driven by the existing El Niña condition, which is expected to remain active for remainder of the year. While Northeast, Northwest and Rockies are expected to observe below average wind speeds in 4Q15, California, Texas and Southeast should see above average wind speeds.

We highlight that wider fluctuations from the long-term average wind speeds could lead to cash flow unpredictability and increase the risk for the investors in wind assets, specifically, wind assets under the umbrella of YieldCos. We believe technology becomes all the more critical to accurately forecast wind patterns to the investors and wind producers alike.

BEP: Not so Windy Affair, Not for this year

Brookfield Renewable Energy Partners (BEP) expects North American wind generation for 2Q15 to be lower than both the long term average (LTA) of 760 GWh and 669 GWh recorded in comparable year earlier period. However, Brookfield's LatAm and European output are expected to be in-line with the LTA.

Figure 27: 2Q Preliminary Outlook – BEP – A Warning Sign?

Wind	Actual Generation		LTA Generation		Actual vs LTA		Actual vs Prior Year
	2Q15	2Q14	2Q15	2Q14	2Q15	2Q14	
North America	593	669	760	760	-167	-91	-76
Latin America	101	-	101	-	-	-	101
Europe	326	144	318	180	8	-36	182

Source: Company Filings

8Point3 Energy Partners

Addressing the post IPO slide

We believe further disclosures on CAFD's distribution payout and expected distribution growth rate in the near term would have added a bit more comfort surrounding the valuation. However, recent disclosures added little to the information already available to us.

How about disclosures on Distribution/Payout – Not much really

As disclosed in the post IPO deck, CAFD's expected distribution target of \$60M for 12- months ending May, 2017 implied an 85% payout and distributable cash flow coverage ratio of 1.1x on its \$70M cash available for distribution (based upon P50 case).

Further out; assuming top range of management's 12% to 15% growth rate guidance on present MQD of \$0.2097 implied ~\$79M distribution to the shareholders for FY2017 (please refer the table below). Moreover, 85% payout implied a total cash generation of \$93M for FY2017.

Figure 28: Implied Cash Needed for Distribution (\$M) in FY17

\$M except per share data	2015	2016	2017
Distribution (Annualized)	\$0.8388	\$0.9646	\$1.1093
Growth		15%	15%
Shares Outstanding (MM)			71
Total Distribution			\$79
Distribution Reserve			15%
Cash Needed			\$93

Source: Company filings and UBSe

What about development pipeline? – More color needed

While latest announced drop downs of 2x100 MW projects from SPWR and FSLR into the new CAFD vehicle, would generate ~\$21 Mn in unlevered CAFD (~\$0.10/W), we believe more such information on dropdown timing of the assets, associated unlevered CAFD and more color on its development pipeline of 13.7GW would have added more transparency and would probably give investors the necessary confidence around CAFD's valuation.

For additional information on the recent FSLR & SPWR projects, please refer to the PPA section above.

How about the technology? Will it seal the deal?

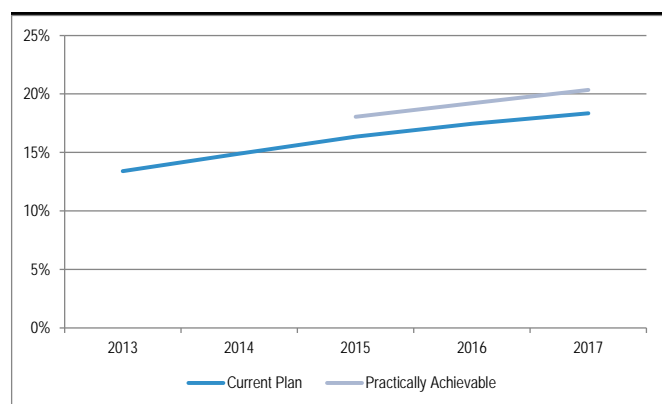
We believe CAFD will be benefitted most by leveraging the technological capability available to both of its sponsors. While FSLR recorded CdTe solar cell efficiency of 21.5%, SunPower has the monocrystalline solar technology of highest order. However, commercial viability to produce highly efficient solar modules will be the key to lower the LCOE.

Specifically, while FSLR's current plan indicates module efficiency to reach 18.35% by 2017, it expects to produce commercially viable solar module with an efficiency of ~20% by 2017. We believe that if superior efficiency translates into lower LCOE

As a reminder, SPWR and FSLR have yet to provide 2015 guidance and are expected to do so on the 2Q15 call (precluded from doing so earlier given the CAFD IPO process)

then this could place CAFD in a better position in M&A market compared to its peers. The question remains how the latest ~35% capacity factor for the NV project jives with the projected efficiency path for 2016 for FSLR?

Figure 29: FSLR's Efficiency Path



Source: Company Slides – 2014 Analyst Day Presentation

Figure 30: FSLR's Efficiency Path

Average Conversion Efficiency Trend	2013	2014	2015	2016	2017
Current Plan	13.40%	14.90%	16.35%	17.45%	18.35%
Low			16.20%	16.90%	17.20%
High			16.50%	18%	19.50%
Practically Achievable			18.05%	19.20%	20.35%
Low			17.90%	18.80%	19.60%
High			18.20%	20%	21.10%

Source: Company Slides – 2014 Analyst Day Presentation

We ran a quick analysis on FSLR and SPWR's historical performance against the guidance provided by the respective companies. While SPWR consistently beat the top end of both the financial and operating guidance range, FSLR did well to meet guidance for majority of the times during the period under consideration.

How they performed vs their 1Q commitment

First Solar reported total revenue of \$469M and adj EPS of -\$0.47 against its sales guidance of \$550-\$650M and EPS guidance of -\$0.45-\$0.55. Results were negatively impacted due to projects that were retained by First Solar for its YieldCo 8point3 Energy Partners.

Figure 31: FSLR's financial and operating performance against actual

FSLR	2013		2014		1Q15		2Q15E	2015E	2016E
	Actual	Guidance	Actual	Guidance	Actual	Guidance	Guidance	Guidance	Guidance
Production	1628	1600-1700	1846	1800-1900	540.3				
Revenues	\$3,309	\$3400-\$3600	\$3,392	\$3600-\$3900	\$469	\$550-\$650	\$750-\$850	\$3800-\$4300	\$3800-\$4500
Gross Margin %	26%	24-26%	24%	19-20%	8%			15-20%	15-20%
EPS	\$4.22	\$4.25-\$4.50	\$4.34	\$2.40-\$2.80	(\$0.47)	-\$0.25-(\$0.35)	\$0.45-\$0.55	\$4.50-\$6.00	\$3.50-\$5.00
Average Conversion Efficiency	13.40%		14.40%		14.70%			16.2-16.5%	16.9-18%

Source: Company Filings and UBSe

SunPower reported total non-GAAP revenue of \$430.6M and adj EPS of \$0.13 vs guidance of \$0.10.

Figure 32: SPWR's financial and operating performance against actual

SPWR	1Q13		2Q13		3Q13		4Q13		2013		2014		2Q15E	2015E
	Actual	Guidance	Actual	Guidance	Actual	Guidance	Actual	Guidance	Actual	Guidance	Actual	Guidance	Guidance	Guidance
MW Recognized	173	150-170	277	260-280	252	240-260	333	300-330	1035	1000-1030	1256	1150-1250	200-230	1300-1400
Revenues	\$574.60	\$475-\$550	\$650	\$550-\$600	\$620	\$550-\$600	\$758	\$675-\$725	\$2,602	\$20-\$2570	\$2,619	\$400-\$2600		\$2400-\$260
Gross Margin %	22.70%	18-22%	19.50%	14-16%	19.10%	17-19%	20.40%	17-19%	20.40%	19-20%	19.60%	19-21%		21-23%
EPS	\$0.22	\$0.05-\$0.20	\$0.48	\$0.05-\$0.15	\$0.44	\$0.15-\$0.35	\$0.47	\$0.15-\$0.35	\$1.68	1.30-\$1.50	\$1.33	1.00-\$1.30		\$1.10-\$1.50

Source: Company Filings and UBSe

How about the historical EPS surprises?

Reported EPS numbers for FSLR were volatile respective to the guidance provided by the company and not consistent enough to remain on either side of the consensus. SPWR were more consistent on beating both the guidance numbers and the consensus estimates. However, we would like to point out that beats and misses are very much dependent upon the nature of the guidance provided by the management (aggressive/conservative).

Figure 33: Historical EPS surprises - FSLR

Surprise History	Actual - Non-GAAP EPS	Consensus	Surprise %	+/- Mid - Surprise Guidance	Surprise %	+/- Surprise
1Q15	-0.47	-0.29	-62%	Negative	0.5	-194% Negative
4Q14	2.02	0.77	162%	Positive	-0.3	773% Positive
3Q14	0.97	0.63	54%	Positive		
2Q14	0.12	0.29	-59%	Negative		
1Q14	1.23	0.57	116%	Positive		
4Q13	0.76	1.04	-27%	Negative		
3Q13	2.09	1.13	85%	Positive		
2Q13	0.45	0.55	-18%	Negative		
1Q13	0.85	0.73	16%	Positive		

Source: Company Filings, Fact set and UBSe

Figure 34: Historical EPS surprises – SPWR

Surprise History	Actual - Non-GAAP EPS	Consensus	Surprise %	+/- Guidance - Surprise Mid Point	Surprise %	+/- Surprise
1Q15	0.13	0.08	63%	Positive	0.1	30% Positive
4Q14	0.24	0.24	0%	Positive	0.225	7% Positive
3Q14	0.29	0.24	21%	Positive	0.25	16% Positive
2Q14	0.28	0.26	8%	Positive	0.325	-14% Negative
1Q14	0.47	0.33	42%	Positive	0.25	88% Positive
4Q13	0.48	0.28	71%	Positive	0.25	92% Positive
3Q13	0.38	0.25	52%	Positive	0.1	280% Positive
2Q13	0.47	0.1	370%	Positive	0.125	276% Positive
1Q13	0.23	0.1	130%	Positive	0.125	84% Positive

Source: Company Filings, Fact set and UBSe

Valuation: Maintain \$21 Price Target

We value 8Point3 Energy Partners by applying a 6% yield on 2018 dividend per share.

Figure 35: 8Point3 Energy Valuation – Predicated off 2018 DPS

8Point3 Energy LP Valuation - UBSe	Downside	Base	Upside
Initial Cash Available for Distribution (CAFD)	\$71	\$71	\$71
ROFO Pipeline	\$59	\$101	\$129
Gross CAFD	\$130	\$173	\$200
Distribution Reserve	15%	15%	15%
Net CAFD	\$110	\$147	\$170
CAFD Available for LP Unitholders	\$88	\$117	\$136
Initial A & B Share Count (Mn)	71	71	71
Incremental ROFO Shares (Mn)	15	20	21
Est. Shares Count (Mn)	86	91	92
CAFD Distributed to LP Unitholders	\$1.03	\$1.28	\$1.48
YieldCo Peer Yield	6.0%	6.0%	6.0%
(Premium) / Discount	-16.5%	0.0%	16.5%
Assumed Yield	7.0%	6.0%	5.0%
Valuation	\$15.00	\$21.00	\$30.00
Upside / (Downside)	-24%	7%	53%

Source: Company Filings and UBS estimates

Abengoa Yield

- **Key Guidance Metrics:**
 - **Dividend Per Share: 2015: \$1.60 | 2016: \$2.10-\$2.15**
 - **LT DPS CAGR (2016-2020): 12-15% per Year**
 - **Net Corporate Debt / CAFD: < 3x**
- **New CEO announced.** In May Abengoa Yield announced that the CEO Santiago Seage would be stepping into the CEO role of Abengoa SA and former Abengoa Bioenergy CEO/Abengoa Yield Director Javier Garoz would become the CEO of Abengoa Yield. Seage will assume the Chairman role on Abengoa Yield's board.
- **Industry Question: Do investors care about Sponsors' owning majority of YieldCo?** NRG Energy management seemingly thought the answer to this question was yes as they undertook its YieldCo recapitalization earlier this year to retain voting control of NRG Yield and also continue consolidating. We emphasize there are other real economic implications of selling below 50%. In mid-July Abengoa's ownership interest in Abengoa Yield declined to 49%. Abengoa's sell-down was widely discussed by management and the initial stock reaction to the sub-50% ownership has been muted but this could become an investor concern in the future. Out of the primary utilities we track Abengoa Yield (ABY), NRG Yield (NYLD), Pattern Energy Group (PEGI), and Transalta Renewables (RNW-CA) do not have incentive distribution rights (IDRs). Below we detail some of the tax complications inherent in selling below 50%:
 - **Net operating losses (NOL):** Limitations around ability to use NOLs after a change in control relate primarily to the "five percent shareholders" (Section 382) acquiring more shares rather than selling. This applies to an ownership change when a 5% shareholder increases their ownership by 50 percentage points during a three year period. As of year-end NRG Yield had the \$60Mn of domestic federal NOL carryforwards. We do not see this as a significant headwind.
 - **Investment Tax Credits (ITC):** The YieldCo must hold the asset for five years or face recapture on a sliding scale (20% for per year; for example, 60% subject to recapture after two-years). For underlying ITC assets the public ownership will most likely not be a factor as long as the asset is held for five years by the YieldCo and is unrelated to the sponsor selling below a 50% stake. For NRG Yield the only asset subject to recapture risk currently is Agua Caliente, making it the last asset likely to dropped through the ROFO agreement, likely in stakes to blend it in over time.
 - **Transfer taxes:** There is more uncertainty on this front. Unlike the ITC above, it appears that a public sell-down by a sponsor could trigger a state or local tax provision related to transfer or property tax liabilities, specifically in California, which has property tax revaluations. These can be mitigated by coming to agreement with specific jurisdictions.

- **Consents in project financing:** In a change of control scenario the debt can be 'put' in some circumstances, creating the need to obtain consents from bondholders. We suspect this could involve limited compensation to project-level debtholders. The DOE loan guaranteed debt could result in further complications, with the owners seeking assurances around.

For further background, please refer to our related reports below:

[2/27/15 Splitting The YieldCo](#)

[10/24/14 The Next Step in the YieldCo Maturation Cycle](#)

Canadian Solar

Major recent developments for CSIQ are the Recurrent acquisition and corresponding pipeline to the parent, and subsequently announced forthcoming launch of the OECD YieldCo.

CSIQ formalizes intentions to create YieldCo structure

CSIQ announced during their investor day that they would be pursuing an OECD YieldCo, to be launched at the end of 2015/ beginning of 2016, following on the heels of their recent acquisition of the Recurrent development platform. Their strategy to integrate downstream into development rather than further upstream into poly manufacturing has bucked the trend among PV manufacturing peers. We maintain our view that the poly (Solar PV) manufacturing space is a high risk undertaking for module manufacturers, and while direct project ownership downstream is capital intensive, it appears to be the most valuable angle. Related, CSIQ's efforts appear to mirror E&C developer Abengoa's efforts to create its own YieldCo, ABY, with both acting as an end market for its multi-sector infrastructure business.

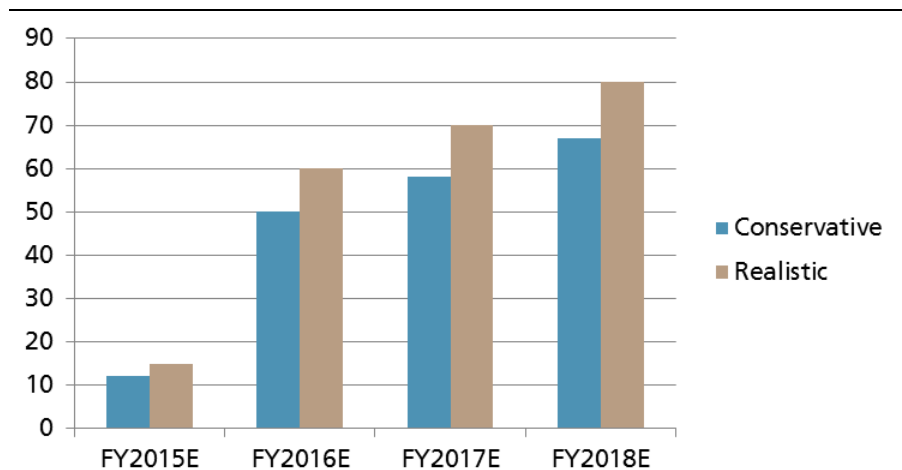
CSIQ wary not to have too much or too little CAFD at IPO

Mgmt flagged that their projected CAFD at IPO will be \$50-60Mn, and mentioned that they have been warned that having less than \$50Mn and incrementally more than \$60Mn in CAFD at IPO will hurt their valuation. In their conservative and realistic scenarios, CAFD will grow by ~14-16% annually after 2016. This is in contrast to the 15-20% Divided per share growth targeted by peers, implying a meaningfully greater required nominal CAFD growth trajectory.

In a relatively uneventful investor day, CSIQ mgmt. offered limited guidance surrounding the YieldCo, but highlighted a new module sales strategy initiated to mitigate the negative impacts of the ITC step-down

Mgmt CAFD projections substantially below peers YieldCo growth

Figure 36: YieldCo CAFD Projections (\$Mn)

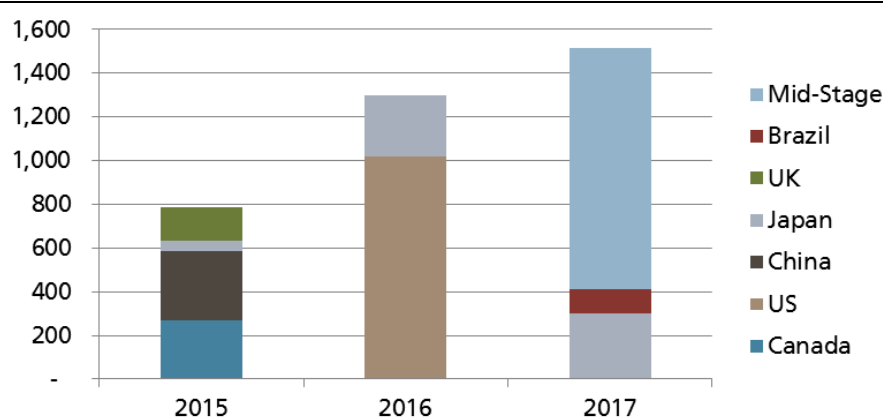


Source: Company Filings

Eligible Dropdowns—low visibility in '17

CSIQ's late-stage dropdown pipeline from 2015-2017 forecasts lumpy dropdowns by region. While 2015 has a relatively mixed pipeline by region, 2016 is heavily US weighted (82%), with Japan taking ~28%. Management has previously cautioned some of the Japanese backlog (~100MWs) is not yet locked via the FIT backlog. There is little visibility into 2017, with ~1.1GW of the ~1.5GW in mid-stage, with the locations not revealed.

Figure 37: Late-Stage Project COD Schedule—Eligible Dropdowns, 2015-2017



Source: Company Filings

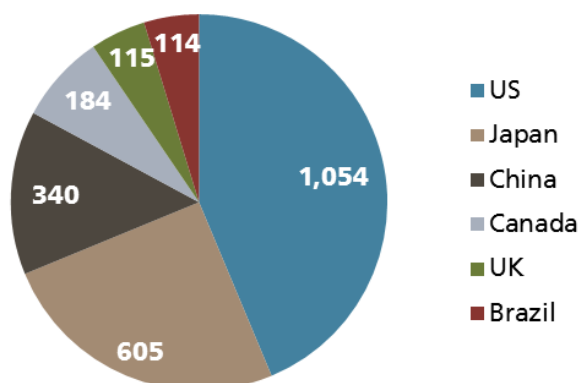
Module manufacturers to fight for YieldCo projects...

With FSLR and SPWR already in the YieldCo market via CAFD, and CSIQ expected to enter, along with additional Chinese manufacturers Trina (TSL) and Jinko (JKS), there is ample competition not just to acquire existing assets, but also to develop them. We see this increased competition to own the project will have the potential to drive development margins and PPAs down. We see a similar trend emerging among utilities, marketers, and IPPs also seeking growth in the sector. We suspect those with scale and real depth in offtaker relationships will survive and thrive.

US pipeline driven by Recurrent

We note that in the chart below, virtually the entire US pipeline is via Recurrent development. At the time of the analyst day in May, Recurrent had a 4.3 GW pipeline, with 1.5 GW of contracted projects and 680 MW of operating or solar assets. Their 1 GW late-stage pipeline (US portion of the chart below) is expected to be built by the end of 2016.

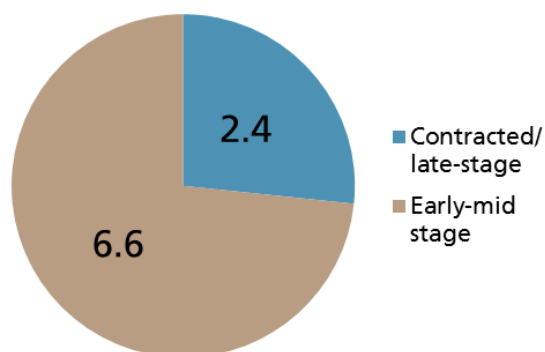
Figure 38: CSIQ Contracted/ Late-Stage Pipeline (GW)



Source: Company Filings

In addition to the 2.4 GW of contracted/ late stage pipeline, CSIQ also has a line of sight on 6.6 GW of early-mid stage projects, which Recurrent makes up 4.3 GW of.

Figure 39: CSIQ Total Pipeline



Source: Company Filings

Module manufacturers pushing to offer direct sales to end consumers too

CSIQ noted that they expect direct sales to consumers increase from 332MW in 2014 to upwards of ~1GW of module sales by 2017. According to mgmt., selling directly to the end user can add 5-10% margin, mirroring the downstream focus of its YieldCo concurrent announcement. The direct sales strategy will largely target the residential and micro-grid segments, and we see this growing in popularity among module manufacturers with high brand-recognition in mature markets (Europe initially, US + Japan soon after). This will involve selling modules and BoS products via online platforms, and we believe will force many resellers out of business, and eventually drive equipment costs down with suppliers eating some of the additional margin. We believe direct sales could take off significantly following the ITC drop and with cost reduction slowing, as manufacturers will need to cut the middle-men to retain margin.

Hannon Armstrong (HASI)

Investing in renewables niches like tax-equity provides better risk-reward

HASI is a specialty finance company investing in renewable and energy efficiency investments, primarily loans. Of late, the company has expanded into the 'secondary' market for tax equity, effectively taking off bank balance sheets, tax equity deals with greater duration than is palatable due to poor asset performance (of which the industry is historically plagued). HASI completed its initial deal to acquire a 1.2GW portfolio of JPM's 'legacy' tax equity portfolio, totaling \$144 Mn in investment last year, contributing 6% in EPS this year. We understand the market could exceed 8GWs if not more as these asset lives are fully extended. Given tax equity generally garners among the best risk/reward returns in the sector, we see this niche as likely contributing significantly above HASI' targeted renewables ROEs of 9%, putting upside to guidance.

Figure 40: HASI: EPS and DPS estimates

	2014A	1Q15A	2Q15E	3Q15E	4Q15E	2015E	2016E
Earnings per Share (GAAP)	\$0.47	\$0.08	\$0.15	\$0.17	\$0.17	\$0.59	\$0.88
Earnings per Share (Core)	\$0.93	\$0.27	\$0.26	\$0.28	\$0.29	\$1.10	\$1.31
Book Value per Share	\$10.39	\$10.24	\$11.21	\$11.12	\$11.25	\$11.25	\$11.39
Leverage (debt plus net payables over equity)	1.91x	1.96x	1.64x	2.07x	2.29x	2.29x	2.67x
Leverage (non-match-funded debt over equity)	1.95x	1.99x	1.66x	2.10x	2.32x	2.32x	2.70x
Dividend per Share	\$0.92	\$0.26	\$0.26	\$0.26	\$0.30	\$1.08	\$1.24

Source: Company sources, UBS estimates

We maintain our recently initiated \$22 Price Target

We include two methodologies below in deriving our price target. We include our initial approach (which includes a basket of Income oriented equities across the REIT and utility complex) as well as the more specific YieldCo methodology we have applied to this sub-sector. Both yield a \$22 target off our unchanged HASI projections for DPS. Our target methodology also reflects a DPS on our pro-forma 2017e DPS and we go on to apply a 6% yield, equivalent to how we value the YieldCo comp group, and discount back.

Figure 41: Current Valuation Frameworks

Revised Dividend	
Estimated 2015 Dividend	\$1.08
Yield Requirement	5.0%
Discount to Blended Comp	-15 bps
Implied Price	\$21.60

Source: UBS estimates

Figure 42: YieldCo Valuation Frameworks

YieldCo Equivalent Valuation	
Estimated 2017 Dividend	\$1.40
Normalized Peer Yield	6.0%
Implied 2017 Target	\$23.33
Discounted Back @ 8%	93%
Implied 12-month Target	\$21.60

Source: UBS estimates

Higher quality than many peers?

Given HASI's senior position in the capital structure to many of the conventional equity investments, there's an argument its 'preferred' and debt-like investments should trade at a premium to peers.

Figure 43: Latest Comp Sheet for Peer Universes

Blended Comparable			
Index	# in Group	Dividend Yield	
		Weight	Current
Property / Equity REITs	57	30%	3.7%
CMBS REITs	5	10%	9.1%
YieldCos	6	40%	4.6%
Infrastructure	5	10%	4.3%
MLPs	30	5%	6.1%
Macquarie Infrastructure Company LLN (MIC)	1	5%	5.2%
Weighted Average		100%	4.9%

Source: FactSet and UBS estimates

Thinking through the Return Proposition on Tax Equity

Having invested \$144 Mn in 1.2GW of assets implies roughly \$120/kW, a small portion of the capitalization equal to just the underlying cash flows of the PPA. Levering this investment a further 2:1 (non-recourse proceeds of \$105 imply a \$38 Mn equity investment). While front end-loaded, the asset generated \$3 Mn in the first full quarter in net income (and ~\$6 Mn in cash flow). We see these returns as superior to many developer margins earned on renewable investments, particularly seeing many of them as senior in the capital structure to the equity investments of YieldCos.

What are the best returns on debt? Solar Resi, and now C&I

Hannon's second niche in renewables lending focuses on non-utility scale deals, specifically residential. While standardization of Asset Back Securities (ABS) could well limit this angle over time, we see a substantial number of independent parties, including premium developer SunPower. Moreover, we see a shift as likely over towards C&I lending as part of a move to lend to another credit-deprived niche in the solar market, particularly with developers scrambling to push this market given its disproportionately high returns. Bottom line, we see a series of opportunities for HASI to hit its portfolio deployment targets of ~\$875 Mn in 2015 – and ~\$1 Bn in 2016 (which in turn only assumes that ~50-60% is actually kept on balance sheet). We do see some risk to continued portfolio growth (at comparable returns) in a post ITC environment – hence the two-year forward guidance for HASI extends through 2015 and 2016.

More growth = more equity needs

We would expect a further round of equity later this year as management appears poised to need additional capital to achieve its stated ~\$500 Mn in owned portfolio growth to hit its EPS growth targets. Assuming 1/3rd equity capital on investments, this would imply \$150-200 Mn in equity capital, and having issued

\$80 Mn earlier this year, another perhaps smaller slug is likely in the ~4q time frame. Assuming success on \$150 Mn in equity investments at a 9% overall targeted ROE, we see EPS growth hitting 15%, at the midpoint of the range, suggesting clear upside latitude on the 14-16% range announced for 2015 (we assume \$1.10 in our case).

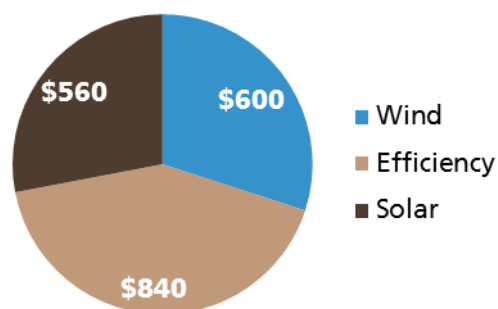
Sell-down of portfolio also provides latitude to hitting targets

Having given an \$875 Mn portfolio growth target in 2015, out of a pipeline of more than \$2 Bn in opportunities evaluated, we see latitude for management to opt to keep rather than sell down more of its portfolio should it need to continue to grow its earnings to hit targets (albeit potentially less accretively than the ~9% ROE typically sought). Bottom line, we see this as providing downside protection to hitting earnings growth targets.

So How is the Portfolio Positioned Today? Where is it Going?

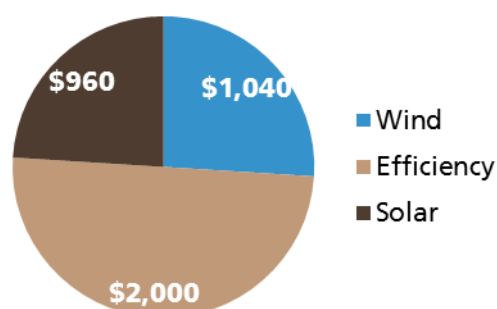
HASI's current portfolio is made up of 31% wind, 29% solar, 35% efficiency, and 5% 'other'. Efficiency's share is expected to increase to over ~40% in their 12 month pipeline, and to ~50% for 13-36 month leads. Wind and solar are projected to take equal shares of the remaining pipeline and leads respectively. With the 12 month pipeline guided to reach ~\$2Bn, and the 13-36 month leads to ~\$4Bn, over 425 projects are being evaluated to reach the guidance.

Figure 44: 12 Month Pipeline (\$ Mn)



Source: Company Filings

Figure 45: 13-36 Month Leads (\$ Mn)



Source: Company Filings

Renewables portfolio expected to grow

Growing the renewables portfolio not only expands the base of potential investment opportunities considerably but the investments have a higher return profile. Efficiency investments have a 4.6% yield but renewables are 200bp higher. Examples of renewable investments made by HASI include non-recourse debt to finance SunPower (SPWR) residential solar leases and acquiring the land under a 60MW FirstSolar (FSLR) facility with a 20-year PPA. As penetration of renewables increases in the US, HASI should have success in converting its pipeline to new portfolio investments. The latest renewables deals highlights what could be a growing market as banks seek to divest equity positions that they have held for over 5-7 years given more stringent banking capital requirements. Some of the earlier renewable projects in the US which banks are still holding are prime candidates for sell-downs.

Potential for more deals with JPM

After HASI's acquisition of a portfolio consisting of 10 operating wind assets from JPM for \$144 Mn, totaling 1.2 GW, we see the potential for them to engage in further similar business with JPM and other banks with tax equity wind portfolios. JPM is expected to own several comparable portfolios, and we believe HASI is in a position to acquire additional wind assets in order to continue building their portfolio through opportunistic acquisitions. Moreover, we suspect other banks could yet follow JPM's example in divesting these specific niche of under-performing renewable tax equity portfolios.

No shortage of opportunities in efficiency either

Some have questioned the potential magnitude for energy efficiency in the EPA's Clean Power Plan modeling but HASI still sees a broad opportunity from continued technological improvement. HASI sees three key components to Energy Efficiency in the context of 111(d): Energy Service Company (ESCO) buy-in, an addressable market, and financing. HASI expects to continue filling the financing need and sees no shortage in the addressable market with the primary question being whether it will have support from ESCOs.

While not a key driver today, management believes that Property-Assessed Clean Energy (PACE) financing can be a key component of 111(d) compliance and an earnings drive for HASI. PACE makes it easier for tenants to make energy efficiency investments but the programs are still very local and require education.

HASI characterizes PACE as "crawling" but thinks it could be running in later years

Why is HASI a YieldCo Comp?

While clearly unconventional, we see its tax advantaged REIT structure coupled with an expected 14-16% EPS growth (and implicitly ~DPS growth profile with historically near ~100% payout of earnings) as quite competitive among YieldCo peers. The company's primary investments are in energy efficiency loans, solar land leases, and of late, in tax equity wind deals discussed at the start of the note. We emphasize HASI' yield is predicated typically off higher return (9%+ ROEs) investments, typically senior in the capital structure to conventional equity investments.

HASI' renewable and efficiency investments have a superior risk-reward proposition to most YieldCo comps

No CAFD equivalent, but its payout is actually predicated on earnings

Notably, the company does *not* trade on CAFD, nor focus on CAFD growth, making the quality of its 5.2% DPS yield all the better vs peers at 4.6% on 2015e Yield. Rather, the company's payout is net of return of capital (depreciation), making its payout in part more sustainable than peers.

HASI future portfolio visibility is the limiting factor vs. YieldCos

While the ultimate return profile of investments appears superior to YieldCos', the entity does not benefit from a parent sponsor that can ensure certainty of future DPS growth. Rather the confidence in the story depends on both continued organic growth in the renewable space (a consistent assumption across all YieldCos) as well as an assumption that debt and debt-like investments pursued by HASI remain sufficiently attractive. While a wider reduction in the cost of capital has been ongoing, we see HASI as likely nimbly gravitating towards higher return opportunities (as evidenced by tax equity, resi solar, and core efforts in efficiency).

NextEra Energy Partners

- **Key Guidance Metrics:**
 - Dividend Per Share: 2015E: \$1.13
 - CAFD (\$Mn): 2015E: \$100-\$120 | 2016E: \$170-\$190
 - LT DPS CAGR (2015-2020): 12-15% per Year

Please refer to reports below for further details:

[4/6/15 Leading The Pack](#)

[10/23/14 Turbocharging The Growth](#)

[7/22/14 Getting Winded](#)

- **First \$400Mn slug of NEP drop-downs completed:** In a relatively quiet quarter NextEra Energy (NEE) executed on the dropdown of 664MW wind into NextEra Energy Partners (NEP). Mgmt guides to \$30Mn CAFD and \$80Mn EBITDA midpoint run-rates for \$412Mn cash. The equity purchase price is offset by \$60Mn as management anticipates adding additional project financing to the \$329Mn currently encumbering the assets. This implies EV / EBITDA of 8.5x and gross equity yield of 8.5%, a higher price than the first drop-down at ~8x EV / EBITDA but also a higher yield. This transaction is light of the initial 9-11x EV / EBITDA guidance for drop-downs.

This drop was a bit unusual as it involved \$109Mn of private placement and continues a theme of YieldCos/sponsors increasingly looking for ways to reduce capital markets risk on lumpy financing needs.

We continue to prefer shares of parent company NEE over NEP

Figure 46: 1Q15 Drop-Down Stats

Projects	MW
Ashtabula III	62
Baldwin	102
Mammoth Plains	199
Stateline	300
Total	664
Run Rate Guidance	
Adj. EBITDA	\$75-\$85Mn
Adj. CAFD	\$28-\$32Mn

Source: Company Filings

Figure 47: 1Q15 Drop-Down Accretion Analysis

NEP 1Q15 Drop-Down	Transaction Capital Structure	\$Mn
681 Purchase Price	Total EV	681
352 Equity	Equity	352
- Corporate Debt	Project Debt Retained	269
329 Debt Assumed	Incremental Project Debt	60
681 EV	Corporate Debt	0
80 EBITDA (UBSe)	Total Equity	352
8.5x EV / EBITDA	Total Debt	329
30 Gross CAFD (Guidance)	Total EV	681
0 Less: Interest Expense		
30 Post-Financing CAFD		
6 Less: Distribution Reserve		
24 True' CAFD		
4.1x Effective Debt/EBITDA		
0.0x Debt / Gross CAFD		
Assume no parent debt at this time		
4.4% Gross EV Yield		
3.5% Net EV Yield		
8.5% Gross Equity Yield		
6.8% Net Equity Yield		

Source: Company Filings and UBS estimates

- **Eyes on the renewables pipeline:** We expect that NextEra Energy (sponsor) management will add additional wind to its pipeline for YE16 COD to fill the 900-1,100MW '15/'16 pending. Following 1Q15 results shares were weak and we attributed that to a lack of conversions at the time. Unlike renewable development peers, NEE is more conservative both operationally and when it comes to sending messages to the Street. Between the Analyst Day and April earnings management converted ~500MW of renewables from its 2015-2018 pipeline forecast into its NEER backlog (to 2.6GW from 2.1GW) with the total origination platform backlog/pipeline midpoint unchanged at 4.9GW. The lack of new pipeline additions is driven by an abundance of caution. Unlike renewable development peers which probability weight opportunities, management opts for a conservative approach. Bottom line, more renewables are coming and we see NextEra as well positioned to capture the opportunities. We see opportunities around Ontario solar, wind, and storage as particularly intriguing.

A positive update to the pipeline could bolster confidence in NEE's development engine. While the parent has a strong inventory of operating assets, the expansion of SunEdison into wind has some investors concerned about market share erosion

Figure 48: Recent Changes in NEER's Backlog and Pipeline

Update Date	Backlog	2015-2016F	2017-2018F	Total
1Q15	2,616	1,000	1,250	4,866
Investor Day	2,114	1,400	1,350	4,864
Change	502	(400)	(100)	2

Source: Company Filings and UBS Estimates

- **With respect to Oncor we see this deal as unlikely for NEE/NEP:** Per the Wall Street Journal (6/26 'Energy Future Scraps Oncor Bankruptcy Auction') Energy Future Holdings Corp notified the Bankruptcy Court requesting termination of the auction process for its ownership stake in the T&D utility Oncor. We see the latest rejection of the Oncor auction process as a negative for NextEra Energy which has publicly expressed interest in the past.

NEP appreciation in June appears tied to optimism about a potential Oncor acquisition.

Distribution per Share Estimates

Below we present our unchanged distribution per share estimates.

Figure 49: NEP DPU Estimates

NextEra Energy Partners DPU Estimates	
2014	\$0.75
2015	\$1.15
2016	\$1.35
2017	\$1.58
2018	\$1.86

Source: Company Filings and UBS Estimates

Valuation: Maintain \$44 Price Target and Neutral Rating

Our methodology remains unchanged with a 5% 2018E yield applied (1pp premium). With respect to the sponsor/YieldCo relationship, we still see NextEra Energy (NEE) as a top-pick given its infrastructure focus. Our pipeline value is effectively for 1GW of additional drop – could also be interpreted as a third-party acquisition adder as well.

Shares of NEP are down ~14% in the past three months with minimal fundamental news although it appears that NEP was bid-up in June in part based upon the thesis that NextEra Energy could emerge victorious in the Oncor bankruptcy process.

Figure 50: NextEra Energy Partners Valuation

NextEra Energy Partners Valuation - 2018E	Downside	Base Case	Upside
Net CAFD	\$410	\$431	\$453
CAFD Distributed to LP Unitholders	\$328	\$345	\$362
Est. Share Count (Mn)	166.9	152.2	157.8
Net CAFD per Share, pre-IDRs	\$1.96	\$2.27	\$2.30
Dividend Per Share (DPS)	\$1.61	\$1.86	\$1.89
Peer Yield	6.0%	6.0%	6.0%
(Premium) / Discount	0.0%	-16.7%	-33.3%
Assumed Yield for NEP	6.0%	5.0%	4.0%
DPS Value	\$27.00	\$37.23	\$47.00
Incremental Wind Pipeline Value	\$3.17	\$6.33	\$7.70
Valuation	\$30.00	\$44.00	\$55.00
Upside/Downside to Current Price	-19%	19%	48%

Source: Company Filings, FactSet, and UBS estimates

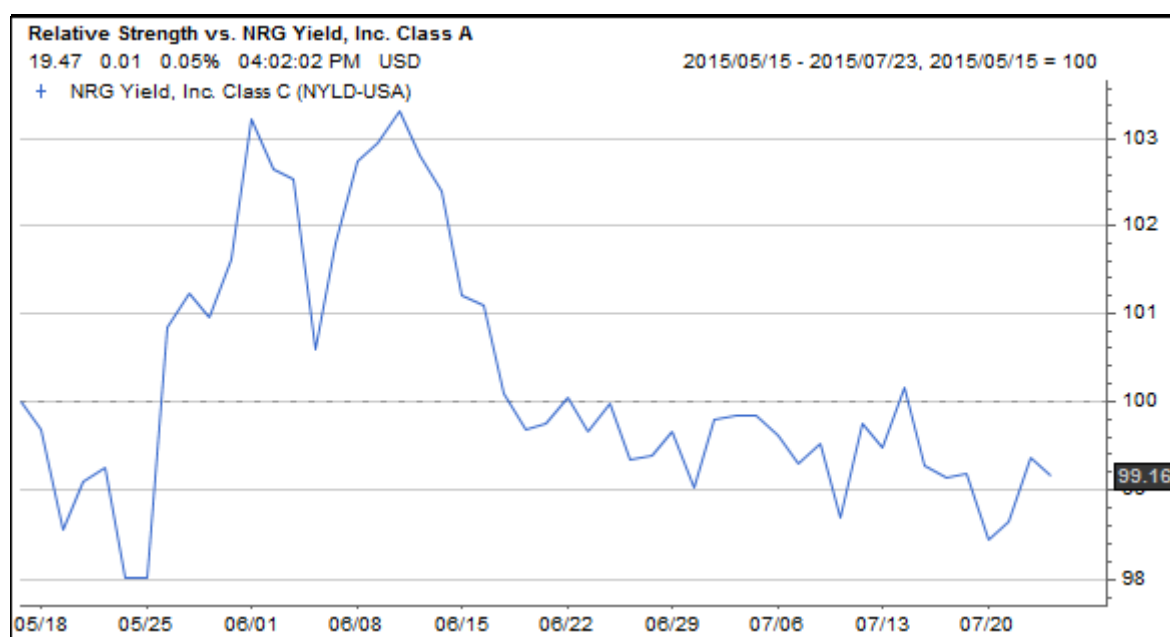
NRG Yield

Class A vs Class C revisited: Classic Class debate

In the weeks after NRG Yield's share recapitalization we were surprised that NYLD.C (1/100th voting class) was trading at a ~3% premium to the otherwise similar NYLD.A (full voting class), a relatively large spread in our view. The trend has reversed and now Class C is trading at a slight <1% discount to Class A, more in-line with expectations.

Class C continued to see stronger liquidity (1,452K 30-Day average) vs Class A (530K 30-Day average), potentially leading to a restoration of Class C's premium.

Figure 51: NRG Yield Class C Relative to Class A (100+ represents Class C trading at premium)



Source: FactSet

Upon the share reclassification there was 154.7Mn shares outstanding and management issued 28.2Mn Class C shares including underwriters exercise.

Figure 52: NYLD Share Breakdown

Class	Shares	Vote %	Est. Annual Dividend
A (1 Vote)	34.6	44%	28
C (1/100 Vote)	62.8	1%	50
Total Public	97.4	45%	78
B (1 Vote)	42.7	54%	34
D (1/100 Vote)	42.7	1%	0
Total NRG	85.4	55%	34
Total	182.8	100%	112

Source: Company Filings, Company Filings, and UBS estimates

Framing the NRG Home Restructuring Debate

In recent weeks there has been substantial discussion around NRG's corporate strategy in an effort to better reflect the underlying 'Sum of the Parts' value embedded within the company. We see a wider focus around capturing the premium value of the NRG Home suite of businesses, following the realignment of business units coincident with its Analyst Day earlier this year. While it appears there are a variety of permutations at play, we see this as motivated by similar factors behind the success of NRG Yield to realize multiple expansion and reduce underlying volatility in valuation.

- **Realizing the resi solar company stand-alone valuation:** We believe the key motivating factor is extracting comparable value of SolarCity (SCTY) and Vivint (VSLR) into NRG's still nascent Home solar efforts. We see NRG as keen to garner the premium multiples on these retail solar companies back to its efforts.

How do we currently value the NRG Solar business?

We presently ascribe **~\$2/sh** in our NRG Energy SOP predicated on hitting its 250MW residential target for year-end, rather than the **~\$5/sh** implied by looking at peer valuations.

Figure 53: NRG Existing SOP Valuation Today (Left) vs. Implied from Peer Comps (Right)

Valuation on per/MW Basis	
SCTY	
2015 Solar Targets	920-1000 2015 Target (MWs)
Residential (NRG Home)	960 Midpoint MWs
250 MW	505-520 2014 Target (MWs)
16 CAFD (c/Watt)	512.5 Midpoint MWs
40 CAFD Equivalent (pre-leverage)	
10% Monetization Yield	52.27 Share Price
400 EV to NRG	96 Shares Outstanding
1,250 Upside EV Scenario to 5x 2015 MW Target	263 Debt Outstanding (per 3Q 10Q)
	5,281 EV (excluding Tax Equity)
Commercial ('Distributed Generation' per NRG Disclosures)	10.30 EV/2014 MWs
191 MW	5.50 EV/2015 MWs
11 CAFD (c/Watt)	
21 CAFD Equivalent (pre-leverage)	
9% Monetization Yield	
233 EV to NRG	
	VSLR
633 Total Solar EV to NRG	224 2014 Target MWs
317 Shares Outstanding ('15e)	10.94 Share Price
2.00 Total Solar EV to NRG, per Share	105 Shares Outstanding
	146 Debt & Capital Lease Outstanding (per 3Q 10Q)
	1,295 EV (excluding Tax Equity)
	5.78 EV/2014 MWs

Source: Company reports and UBS estimates; excludes convert dilution, tax equity, and ABS issuances for VSLR and SCTY

Please refer to our previous note at the time of the Analyst Day in January contrasting [NRG's solar efforts](#) to SCTY and VSLR, for the base of the above two tables.

- **Breaking apart the retail business?** Among the core elements of any potential spin of NRG Home, would be a need to retain the core cash flows associated with the retail business, which remain substantial, and provide the bulk of the cash flow to NRG Classic. We don't see a spin of any of these cash flows as palatable seeing the associated cash flow volatility and earnings. Notably, management presented the total 'opportunity' for the retail business

NRG may be contemplating another spin, eventually?

Restructuring is worth \$2-3/sh upside in our view

We prefer NRG parent over NYLD

to exceed \$1 Bn, off the \$615 Mn guidance in 2015 by 2022, primarily driven by complementary sales.

- **If the retail business doesn't 'go with the spin': a cross-marketing deal is necessary.** NRG's "secret sauce" in the solar business appears to be leveraging the infrastructure for both customer acquisition as well as customer service offered by NRG's existing retail footprint. Negotiating deals to maintain these benefits for any spin would prove vital. We further emphasize that NRG has indicated that it would eventually seek to 'drop-down' (sell) any of its successful residential solar projects down into the YieldCo structure making NRG Home spin really a focus on development than long-term ownership (effectively lead generation in our view). The question is whether any NRG Home business would continue to feed into the NYLD YieldCo structure as well? Likely yes.
- **Solar can't necessarily be a FCF negative company and spun-out:** Given the negative EBITDA associated with this business (excl from guidance), we see a need to achieve critical mass and sufficient cash flows and liquidity to stand alone as a company.
- **Proving out the solar business is key.** We believe one of the key issues for shares as it relates to the projected improvement in solar market share implied by its figures. We believe many solar investors fail to appreciate NRG's incumbent position to cross-sell solar energy across the less known Northeast markets. *We see execution on even just NRG's base plan will afford substantially greater credibility with solar investors – and put it rapidly on the map vs. existing large-scale peers.*
- **Timing is likely 2016 earliest.** We still see any developments as very much preliminary. We see a need to first prove out the business, and generate cash flow on its own to make this arrangement work.

Ivanpah faces operational challenges pains but still early

The Wall Street Journal released another article on June 12th ('High-Tech Solar Projects Fail to Deliver') regarding NRG's jointly-owned Ivanpah solar thermal asset in California as investors continue to question the technology in the face of solar PV's declining cost curve. The WSJ previously called the asset the "\$2.2 Billion Bird-Scorching Solar Project" and continues to focus on the performance to date that has not met initial projects. Ivanpah is one of the world's largest concentrating solar power (CSP) assets and was projected to generate 940,000MWh annually but only generated 419,000 in 2014 (45%). The asset is jointly owned by NRG (50%), Google (28%), and BrightSource (22%) with \$1.6Bn of Title XVII federal loan guarantees. NRG has applied for \$581Mn of cash grants for Ivanpah and has received \$485Mn and has \$1.2Bn of Ivanpah financing outstanding.

Despite operational initial teething issues, full operations remain ~2-years away

Following our latest review of Ivanpah's disclosures we have reduced our **near-term** adjusted EBITDA and CAFD estimates. Specifically we adjusted two assumptions:

- **Reduced capacity factor to 15% from 27%:** In 2014 the capacity factor was 12.2% and was approximately 15% in the first quarter of 2015. Our original estimate of 27% was consistent with 940,000MWh expected generation. This 45% reduction in our generation estimate is consistent with the shortfall in 2014 vs the originally projected generation. We maintain our capacity factor assumption in the longer-term at 27% reflecting full operations are achieved.

- **Increased O&M per kW-year to \$75 from \$64:** The higher cost structure is driven almost entirely due to fuel costs which totalled nearly \$4Mn in 2014 (\$9/MWh). The WSJ reports that the unit requires four hours of natural-gas each morning to support operations.

We caution that it is likely too soon to take such a punitive view on the asset on a longer-term basis as management has stressed that it originally contemplated a ~four year process to bring the asset up to full capacity and it is not yet halfway into that timeframe. While we are concerned, we take additional comfort in the fact that NRG Energy does have assets that it can drop into NRG Yield in the interim and still has years before it will likely sell the asset to NYLD.

What's the risk? How much CAFD will it generate?

The development issues are primarily a risk for NRG parent, rather than NYLD, and will ultimately determine the drop-down multiple. Given the magnitude of debt, the multiple would have to be quite healthy with a lower cash flow profile.

Figure 54: Ivanpah 2014 Snapshot

Ivanpah 2014 Snapshot				
	Unit 1	Unit 2	Unit 3	Total
Capacity	125	133	133	391
Capacity Factor (%)	13.9%	11.1%	11.8%	12.2%
Generation (MWh)	151,966	129,263	137,856	419,085
Fuel Cost (\$Mn)	1	1	1	4
Fuel per MWh	8.3	10.0	8.9	9.0
Fixed O&M (\$Mn)	9	9	9	28
Fixed O&M per MWh	57.9	72.4	67.9	65.7
Fuel + O&M (\$Mn)	10	11	11	31
Fuel + O&M per MWh	66.2	82.4	76.8	74.7
UBSe				
	Updated	Previous		
O&M (\$/kW-yr)	\$75	\$64	←	
Capacity Factor (%)	15%	27%	←	
EBITDA	\$30	\$68	←	
CAFD	\$7	\$26	←	

Source: Company Filings, SNL Energy, Department of Energy, and UBS Estimates

Why are we so focused here? Others are having issues.

Abengoa and Abengoa Yield also have exposure to solar thermal with Abengoa Solar advertising proprietary technology. Abengoa Solar operates the Solucar Complex (PS10 & PS20) in Spain which represents 31MW of capacity but there are aspirations to add more.

In September Abengoa S.A. purchased BrightSource Energy's 50% ownership in the Palen Solar thermal development project for an undisclosed amount. The Riverside California asset has faced pushback from the California Energy Commission on various fronts and was ultimately approved in a scaled down form (250MW with one power tower vs 500MW with two power towers previously). Following the scrutiny on Ivanpah, it remains to be seen whether Abengoa will ultimately continue with the development plan; however, Abengoa has disclosed that it plans some changes to the project such as adding storage and reliance on its own technology. BrightSource previously disclosed that the project was unlikely to qualify for ITCs given its 28-month construction cycle.

Can NRG Solar save the day? Only a modest contributor

While we see the development of a Residential and C&I solar effort as an excellent source of multiple uplift for NRG, we see this strategy as limited in terms of total asset contributions. Management's guidance net of leverage for NYLD by 2019 is just \$70 Mn for the resi business and \$35 Mn for the C&I (DG) business. We see this as amounting to effectively just one large utility-scale project, and indicative of a clear slowing trend. For example, currently NRG's ROFO pipeline beyond 2015 includes just a \$250Mn equity investment for residential and other DG solar portfolios coming online after this year. In contrast management has guided to ~\$350Mn of gross CAFD for all of its non-distributed solar assets.

NYLD Desert Sunlight Analysis

Below we performed an analysis on NYLD's recent Desert Sunlight acquisition, showing an implied CAFD yield of 7.7%, generally lower than what we've seen of recent comps. In contrast, recent deals have been in the ~9% range. This PPA was signed in 2010 (estimated at \$150/MWh) at a significantly higher price than what is seen today, providing some element of contract risk at expiration (25-year tenor). We see this deal as rivalling TERP's latest Invenergy wind acquisition at an 8.4% levered yield as among the tightest thus far, continuing to illustrating the market highs for renewable assets.

Figure 55: NYLD Desert Sunlight Economics Breakdown

Desert Sunlight (NYLD from GE, June 2015)	
Income	
EBITDA	45
Cash Flow Available for Distribution (CAFD)	22
Capitalization	
Assumed Debt	287
Equity Paid	285
Total Price	572
Implied CAFD Yield	7.7%
EV/EBITDA	12.7
Capacity (MWs)	
Implied Equity \$/Watt	4.16
Implied EV \$/Watt	2.07
Capacity Factor	27%
GWh	325.22
O&M (\$/kW)	30
O&M (\$ Mn)	4.13
Rev (\$ Mn)	49.13
Implied PPA Price (\$/MWh)	151.05
PPA Vintage	CPUC 2010

Source: Company Filings, UBS

Following NRG's latest acquisition of GE EFS' interest in the Desert Sunlight project in California (a FSLR built project), we look for commentary from NRG around the outlook for future for further such deals following suggestions that recent third-party transactions in the wind sector were too expensive for NRG.

Valuation: Maintain \$27 Price Target

Our Price Target remains derived from 2017E distribution yield.

Figure 56: NRG Yield Valuation

NYLD 'Core' Portfolio (\$Mn)	UBSe	ROFO 2 (\$Mn)	UBSe	Remaining ROFO (\$Mn)	UBSe
EBITDA		EBITDA	120	EBITDA	218
Core Asset EBITDA (Inc. ESC Acq.)	307	CAFD	35	CAFD	101
Alta Wind Asset EBITDA	220	Corporate Interest (Post Tax)	(4)	Corporate Interest (Post Tax)	(8)
ROFO 1 Asset EBITDA	102	Total Net CAFD	31	Total Net CAFD	93
Total EBITDA	629	Distribution Reserve (1-Payout)	10.0%	Distribution Reserve (1-Payout)	10.0%
CAFD		Net CAFD	28	Net CAFD	84
Core Asset CAFD (Incl. ESC Acq.)	109	EV / EBITDA	10.1x	EV / EBITDA	10.6x
Alta Wind Asset EBITDA	70	Enterprise Value	1,217	Enterprise Value	2,319
ROFO 1 Asset EBITDA	29	Project Debt Assumed	737	Project Debt Assumed	1,763
Corporate Interest (Post Tax)	(25)	Corporate Debt Issued	100	Corporate Debt Issued	218
Total Net CAFD	183	Equity Issuance	380	Equity Issuance	338
Distribution Reserve (1-Payout)	10.0%				
Net CAFD	164	Drop Debt/EV/ITDA	7.0x	Drop Debt/EV/ITDA	9.1x
Initial Sharecount (2016E)	154.6	Drop Equity Yield (Net)	7.4%	Drop Equity Yield (Net)	24.8%
Incremental ROFO Shares (Mn)	19.2	Incremental Shares (Mn)	4.4	Incremental Shares (Mn)	14.8
2016E Shares Count (Mn)	173.8	2016E Shares Count (Mn)	173.8	2016E Shares Count (Mn)	173.8
Net CAFD per Share	\$0.94	Net CAFD per Share	\$0.16	Net CAFD per Share	\$0.48
Assumed Yield	6%	Assumed Yield	6%	Assumed Yield	6%
Valuation	\$15.75	Valuation	\$2.69	Valuation	\$8.03
Official Price Target	\$27.00	Carslbad+Mandalay	\$0.18	Near-Term DG & C&I	\$0.34

Source: Company Filings and UBS Estimates

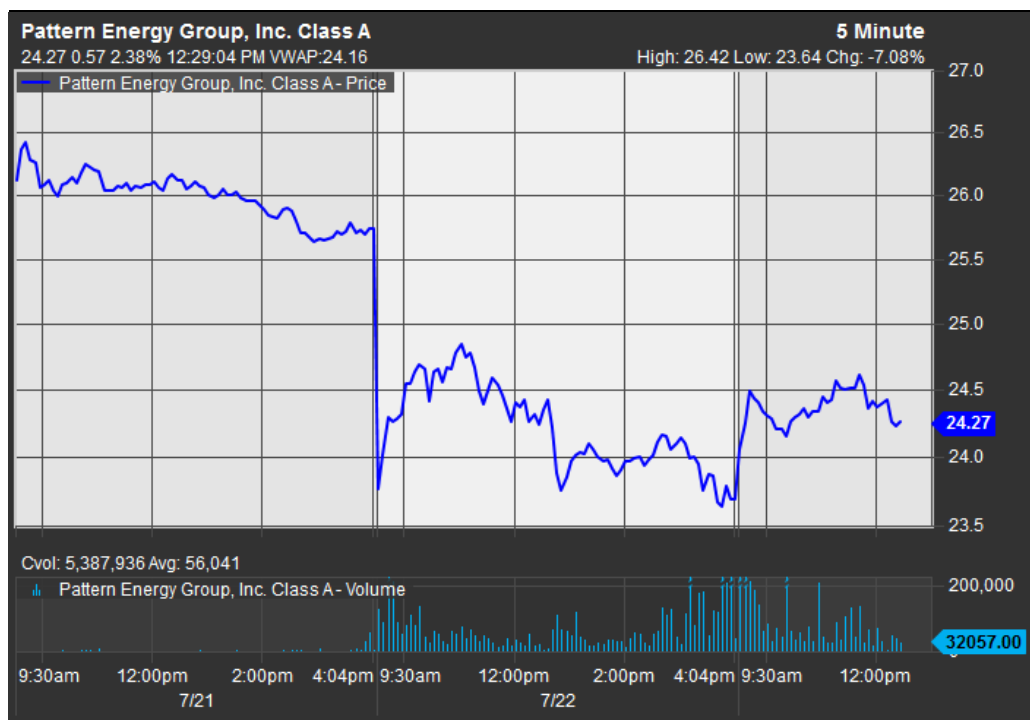
Pattern Energy

Pattern Energy Group Inc. (PEGI; Not Rated) is a Canadian YieldCo that is similar to other yield-focused renewable development companies in that they have a Right of First Offer (ROFO) agreement with their parent sponsor company, Pattern Development Group LP. PEGI held an investor day on 6/24, and its update is relevant for the YieldCo sector as its new growth rate guidance (12-15%) is now comparable with CAFD and NEP, adding further competition to the YieldCo space.

Recent Capital Markets activity:

- Proposed acquisition of the remaining 170 MW of the Gulf Wind facility, currently held by the parent co. Pattern Development for a cash purchase price of \$85.8 Mn. Resulting from the deal, PEGI will own all 283 MW of the facility.
- Offering of up to \$125 Mn of Class A common stock, plus underwriter allotment.
- Private offering of \$225 Mn aggregate principal amount of convertible senior notes due 2020, + a 30-day option for initial purchasers of the notes to purchase up to an additional \$33.75 Mn principal amount of notes
- The proceeds from the stock and notes will be used to repay debt on several assets:
 - K2:
 - 270 MW wind project, PEGI acquired a 33% (90 MW) interest in the facility from Pattern Development
 - Lost Creek/ Post Rock:
 - 270 MW interest in the 351 MW cumulative across the 2 wind projects
 - Acquired from Wind Capital Group for \$242 Mn + net debt of \$102 Mn
 - Gulf Wind:
 - 283 MW wind facility
 - In addition to the financing specifics above, PEGI will prepay the outstanding balance of the Gulf Wind project debt of \$154.1 Mn

Figure 57: Recent Stock Performance



Source: FactSet

What's new at PEGI?

- Mgmt highlighted an increase in CAFD/sh (CAGR through 2017) to 12-15%, up from 10-12% previously.
- Historically, PEGI has pursued a payout ratio of 80% of CAFD, and between 2%-3% increases in dividend per quarter between 1Q14 and 2Q15, equating to a total increase of 13% in that period.
- Management stated that there would be no consolidation between PEGI and Pattern Development, as there have been discussions in the past regarding a reintegration of Pattern Development employees.
- Expansion of ROFO list by 526 MW.
- Mgmt noted that they will need \$1.5 Bn in capital to execute on their 1.3 GW owned-ROFO pipeline, but they will not fund this solely through an equity raise. They will pursue debt options for a significant portion of the capital requirements, likely pursuing a warehouse facility.
- Mgmt is targeting an owned capacity of 5 GW by FY19, equating to \$400 Mn in CAFD.
- Pattern Development's dev. pipeline increased to 5.9 GW.

CAFD increase reflects improved growth expectations

Mgmt noted that they expect CAFD to reach \$400 Mn by FY19, up from mid-\$80's Mn by the end of 2015. Below, we highlight the pace that CAFD has grown and is guided to grow since the IPO, through 2019.

Figure 58: PEGI Historic & Mgmt Projected CAFD

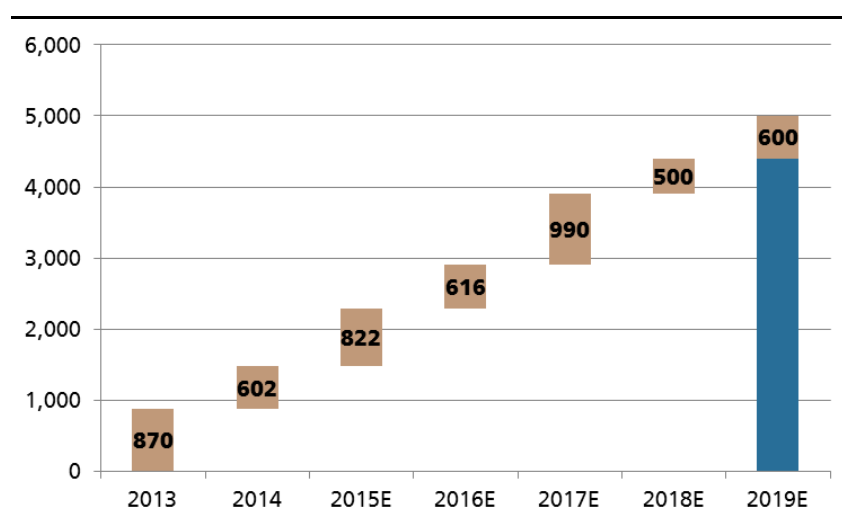
Year	CAFD
2013	\$43
2014	\$62
2015E	\$81-87
2019E	\$400

Source: Company Filings

Improved pipeline visibility a main agenda for mgmt

In a move we assume PEGI acted on to follow their main competitors' leads, mgmt. provided greater visibility into their expected operating asset portfolio by year and location. The annual dropdowns are anticipated to reach a total cumulative operating capacity of 5 GW by 2019.

Figure 59: New Operating Assets by Year

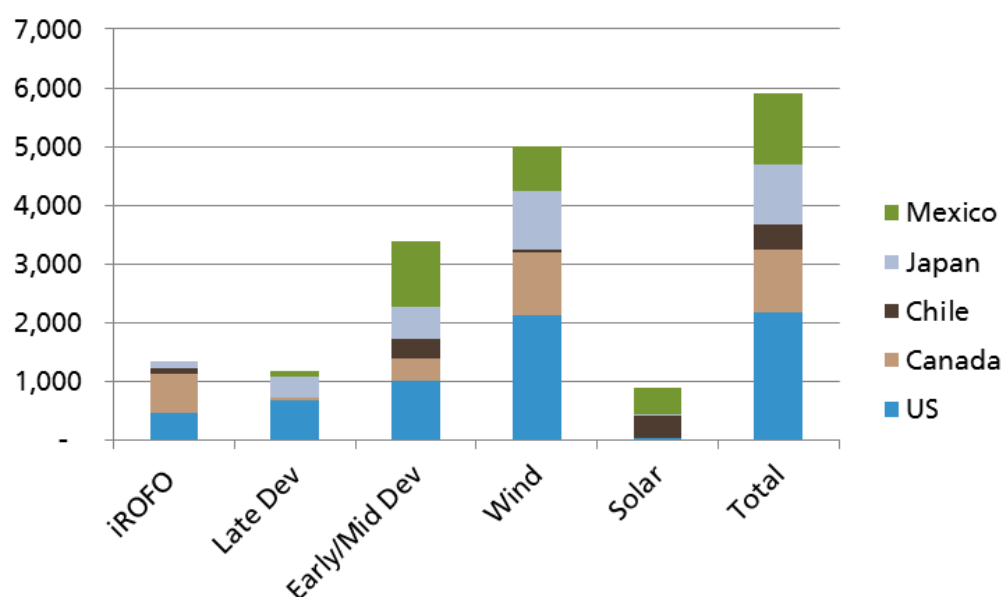


Source: Company Filings

PEGI expanding footprint into Japan & Mexico

Along with greater annual visibility, mgmt. added insight into the geographical breakdown of their development pipeline via Pattern Development, as seen below. Mexico is expected to take a large share of the solar and wind development and ROFO pipelines, while PEGI is focusing more efforts in Japan as well.

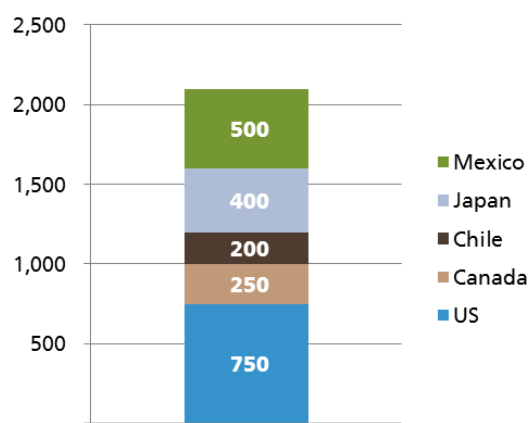
Figure 60: ROFO & Development by Geography & Asset Type



Source: Company Filings

By 2019, mgmt. is projecting to develop 2.1 GW at Pattern Development, based on the geographical distribution below.

Figure 61: 2019 Business Plan



Source: Company Filings

M&A to feed pipeline as well

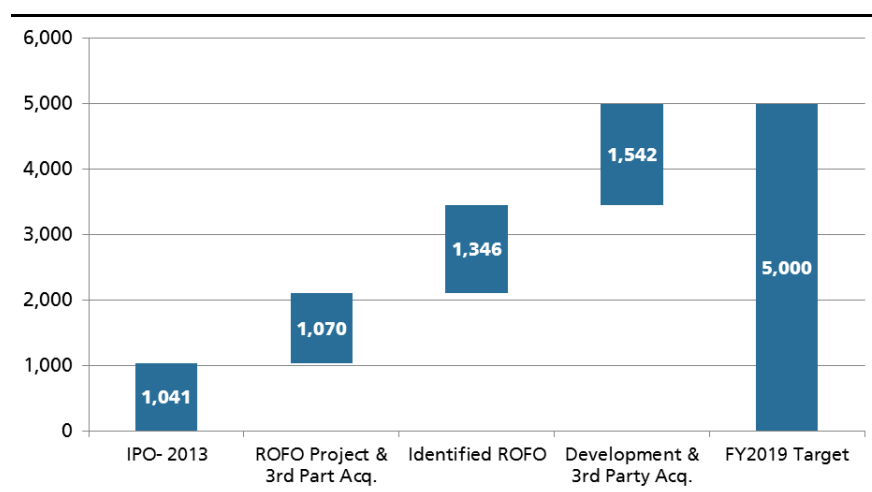
While it is assumed that much of PEGI's portfolio is built on Pattern Development projects, mgmt. emphasized that their M&A strategy is thorough and they are actively pursuing deals. Of the additional 2.9 GW PEGI expects to have operating by FY2019, 53% are expected to be from 3rd party acquisitions. In the projects they look for 11-13x CAFD and 6-9% levered IRR, although project metrics change by geography. They claim to have screened 200 projects and pursued 10% of them, with 50% of the pursued projects being successfully acquired. While the M&A data seems high, it is a bit inflated because PEGI purchases projects from

Pattern Development. PEGI did note that they buy from Pattern at better terms than they are seeing in the market, and in general they are seeing irrational behavior in the market due to the increased competition for projects.

Significant capital raise needed to execute on ROFO

As show below, PEGI's 5 GW FY19 target is predicated on 1.3 GW of ROFO. Mgmt noted that the capital required to execute ROFO is \$1.5 Bn, which they will fund using a mix of debt and equity. While they have funded capital needs through equity offerings in the past, mgmt. stated that a warehouse could be in the works, and even eluded to a 60/40 split of equity to debt to fund the 1.3 GW ROFO.

Figure 62: Capacity Ownership Expectations



Source: Company Filings

SolarCity

2Q guidance calls for +40-50% y/y revenue growth

In May, SCTY released Q2 guidance, which we present below. Key highlights include targets for 180 MW installed (*+68% from 107 MW *deployed* in 2Q14), \$86-92m total revenue (+40-50% y/y), and \$170-177m OpEx (+75-82% y/y). Mgmt reiterated its 2015 guidance for 920-1,000 MW deployed.

Figure 64: 2Q15 Guidance vs. 2Q14 Financial Results

	2Q15	... vs. 2Q14
MW installed	180	+68%*
Operating lease & solar energy systems incentive revenue	\$70-74m	+62-71%
Solar energy system sale revenue	\$16-18m	(12%)-(1%)
Total revenue	\$86-92m	+40-50%
Operating lease & solar energy systems incentive gross margin including amortization of intangibles:	46-50% \$4m	(177)-(577) bps
Operating expenses including amortization of intangibles & stock comp expense:	\$170-177m \$20-25m	+75-82%
Non-GAAP loss per share	(\$1.60)-(\$1.70)	Q214: (\$0.96)

Source: Company reports

Management plans to introduce its CAFD metric in 2Q

In its attempts to increasingly emphasize SCTY's potential to form a YieldCo, mgmt will begin providing cash available for distribution (CAFD) metrics for its *entire contracted portfolio* (rather than just a discrete generic project) in Q2. Management has emphasized that the metric will not represent a stable prospective figure given the substantial tax-equity drag on the portfolio during the initial period. Last quarter, they introduced a new metric for Economic Value Creation (EVC), which splits up the firm's value into two separate theoretical companies: "DevCo" upfront investment in Year 1 and "PowerCo" project cash flow forecasts in Years 1-30. The objective of EVC is to estimate expected cash generation (over 30 yrs) from recent quarterly installations.

Another new metric introduced in Q1 is Net Retained Value (NRV), which forecasts the value remaining to equity holders (value of projected cash flows from PPA/Lease energy contracts, renewals, and MyPower) after subtracting net debt. Traditionally, SCTY had only provided Gross Retained Value (GRV), which solely measures the value of contracted portfolio cash flows (discounted at 6%, assuming 90% renewal rate at 20 yrs for PPAs), as of the end of the quarter.

We display SCTY's released end-of-quarter GRV estimates for 1Q13 onward:

Figure 63: Mgmt guidance vs. actual results – MW deployed, 1Q13-1Q15

	Guidance	Results
1Q 13	41	46
2Q 13	48-53	53
3Q 13	70-77	78
4Q 13	101	103
1Q 14	78-82	82
2Q 14	105-110	107
3Q 14	135-150	137
4Q 14	179-194	175
1Q 15	145	143

Source: Company reports

Management has been increasingly emphasizing YieldCo-based valuation, supported by recent EVC and NRV metric introductions.

Figure 65: Historical Gross Retained Value – 1Q13-1Q15

	1Q13	2Q13	3Q13	4Q13	1Q14	2Q14	3Q14	4Q14	1Q15
PPA/Lease Energy Contract, \$M (6% discount rate)	305	364	496	631	840	1,245	1,539	1,685	1,946
PPA Lease Renewal, \$M (6% discount rate)	264	298	350	421	451	558	640	738	800
MyPower, \$M (6% discount rate)	0	0	0	0	0	0	0	166	328
Gross Retained Value, \$M (6% discount rate)	569	662	846	1,052	1,291	1,803	2,179	2,589	3,074
SCTY share price (\$)	\$27.02	\$41.35	\$53.35	\$74.09	\$53.25	\$71.53	\$59.18	\$48.61	\$60.05
Shares (M)	75.2	76.5	79.9	79.8	91.4	92.3	93.3	93.3	96.7
Gross retained value/share (\$)	\$7.57	\$8.65	\$10.59	\$13.19	\$14.12	\$19.54	\$23.35	\$27.74	\$31.80
Price/GRV	3.6	4.8	5.0	5.6	3.8	3.7	2.5	1.8	1.9
Gross Retained Value per Watt	\$1.25	\$1.27	\$1.37	NA	\$1.56	\$1.72	\$1.72	\$1.69	\$1.78

Source: Company reports

Below, we show historical NRV estimates, based on management guidance, for the last three quarters. On an absolute basis, NRV has trended up by ~13% and ~6% q/q in 4Q14 and 1Q15, respectively.

Figure 66: Historical Net Retained Value – 3Q14-1Q15

	3Q14	4Q14	1Q15
PPA/Lease Energy Contract (6% discount rate)	1,539	1,685	1,946
PPA Lease Renewal (6% discount rate)	640	738	800
MyPower (6% discount rate)	0	166	328
Gross Retained Value, \$M (6% discount rate)	2,179	2,589	3,074
- Solar Asset-Backed Loans Outstanding	(321)	(319)	(313)
- Aggregation and Other Non-Recourse Debt Outstanding	(118)	(157)	(296)
- Solar Bonds Debt and Other Debt Outstanding	(20)	(23)	(118)
- Revolver Debt Outstanding	(143)	(130)	(175)
- Forecasted Net Cash Costs to Deploy Backlog	(30)	(30)	(30)
+ Cash and Short-Term Investments	733	643	576
Net Retained Value (\$M)	2,280	2,573	2,718
Net retained value/share	\$24.44	\$27.57	\$28.11
Price/NRV	2.4	1.8	2.1
Net Retained Value per Watt	\$1.80	\$1.68	\$1.57

Source: Company data

On an absolute basis, NRV increased ~6% q/q in 1Q15 on higher projected PPA/Lease and MyPower payment cash flows.

Project Financing Remains a Key Issue

Management has stated that they are currently in the process of attempting to complete a fourth asset-backed solar (ABS) note transaction in order to secure additional financing for future installations. Thus far, they have completed three such transactions, with a debt monetization range of \$1.24/W-\$1.71/W and a collateralization range of 44-118 MW per issuance. With only 209 MW, in aggregate, securitized into ABS, management suggested that 789 MW were still available for long-term financing, as of 3/31/15. According to guidance, this would represent ~\$665m in financing receivables (~\$105m from 303 MW in agg facilities; ~\$560m from 487 remaining MW, assuming total leverage for PPAs/leases of \$1.05/W and for MyPower of \$2.65/W).

Management is attempting to complete a fourth solar ABS transaction, expected sometime this year.

We present data on SCTY's last three ABS issuances:

Figure 67: Historical ABS Issuances

	LMC I	LMC II	LMC III
Date	Nov-13	Apr-14	Jul-14
Securitization Issuance (\$M)	\$54.40	\$70.10	\$201.50
/ Aggregate MW Collateralized	44	47	118
= Debt Monetization (\$/W)	\$1.24	\$1.48	\$1.71
Spread over the Benchmark Rate (bps)	265	230	180 (Tranche A)
Residential / Commercial Mix (% of ADSB)	71 % / 29%	87 % / 13%	86 % / 14%
Contract Price – Weighted Average (\$/kWh)	\$0.15	\$0.15	\$0.15
FICO Score – Weighted Average	762	767	763

Source: S&P

Tax equity has also been accelerating, as of late: last quarter, the firm issued four new tax equity funds. As of 3/31/15, total remaining distributions to JV partnerships were forecast at \$912M (estimated payment period of 5-8 years). Undeployed tax equity financing capacity was estimated to be at 624 MW.

Tax equity structuring for residential project

Below, we present the return structure for a generic tax equity partner following requests from clients for a deeper understanding of what economics look like for tax equity investors. As displayed, the tax equity partner's return is 9% in our analysis, which matches up with what we have heard from various parties.

The typical tax equity investors receives 35% of the cash flows from the PPA payments (for ~7-8 years), in addition to the value from accelerated depreciation and the ITC rebate. These PPA cash flows are the primary manner in which the tax equity investor's returns are directly tied to the performance of the system. As we have noted in previous reports on residential project returns, the typical O&M cost in the residential space is \$0.02/Watt/year, outside of the inverter replacement costs. As this model is only 8 years in length and the typical inverter is replaced in year 11, this aspect of O&M is not accounted for.

Figure 68: Return Profile for Tax Equity Partners

Assumptions										
System Size	6,000 Watt									
Production	1,400 kWh/kW									
ITC	30%									
Tax Rate	35%									
PPA	0.15 \$/kWh									
FMV of System	4.7 \$/Watt									
Eligible Accel Depr.	3.995 \$/Watt									
Eligable Depr. Cost	\$23,970									
Capex	1.75 \$/W									
ITC	1.41 \$/W									
TE % of PPA CF	35%									

	0	1	2	3	4	5	6	7	8
Capex	(10,500)								
ITC		8,460							
PPA Payments to TE Inv.		441	441	441	441	441	441	441	441
O&M		120	120	120	120	120	120	120	120
Revenue after O&M		321	321	321	321	321	321	321	321
Accelerated Depr. CF		1,678	2,685	(1,611)	(966)	(966)	(483)		
Cash Flow	(10,500)	10,459	3,006	(1,290)	(645)	(645)	(162)	321	321
MACRs schedule		20.0%	32.0%	19.2%	11.5%	11.5%	5.8%		

IRR	9%
-----	----

Source: UBSe, Company Filings

Sun Edison

What's our view on the stock post Vivint acquisition?

SUNE's stock price reaction in the aftermath of the Vivint deal highlights several street concerns; however, we explicitly reiterate our view that any weakness should only be due to potential financial market execution risks around the structure of the deal, rather than a view on the fundamentals of the Vivint business itself. Another factor causing SUNE & TERP's underperformance of late is primarily tied to investor's adjusting TERP ownership to make space for the TERP Global spin.

We think the dislocation is appealing, but see better value with TERP in immediate term

We remain constructive overall on the expansion in resi solar; and reiterate our Buy rating on shares following the transaction. We continue to see shares as attractive following the latest slew of deals. We suspect the next quarterly update could well act to 'summarize' all of the latest deals – ROFO arrangement, development platforms, and operating assets across both its emerging market and OECD efforts (not to mention organic execution on projects already contracted). We see the residential expansion as entirely logical – and a potential key source of future incremental MWs, albeit contributing to a limited extent to TERP's backlog given limited development gestation period.

Our views on fundamental impacts from the deal

On July 20th, SUNE bolstered its DG push with a \$2.2bn (including debt) acquisition of Vivint Solar (VSLR). VSLR's 523 MW contracted rooftop solar portfolio will be dropped into TERP. The key takeaway was mgmt's revised 2016 guidance for capacity build to 4.2-4.5GW from an earlier 2.8-3GW. Read our detail note on the acquisition on this [link](#) here.

The Latest Line on the SUNE Pressure

Is SUNE ready for 'boots on the ground' – yes, story is increasingly execution

While SUNE has historically prided itself in having a lean cost structure, we see the latest shift in strategic alignment towards direct ownership of an installer and people-heavy development business as justified given its desire to be in all segments of the renewable sector to 'feed' the YieldCo beast. This shift had been previewed at its Analyst Day, suggesting it would eventually migrate into this segment as well (although a partnership /non-installer approach had appeared more likely at that point in time). While the timing of the Vivint deal (or any residential acquisition) appears to be earlier than recently articulated by management, we see SUNE's move to take advantage of the recent swoon in VSLR share price (down ~30% from IPO) as simply opportunistic around market dislocations. Please see our respective notes on both businesses from earlier this week for further background on the deal. While many have painted SUNE as strictly a capital markets story – we emphasize the story is indeed shifting towards execution around the series of acquisition platforms, but do not necessarily have reason to worry over this transformation.

Financing and Liquidity is the focus in solar land

We see wider capital market perturbations as weighing widely on the solar sector, with SUNE the most exposed to the need to tap capital markets for a variety of financings. While successful execution on deal-making is critical given its thinner

liquidity relative to peers, we see recent execution around both development and operating company warehouses as providing latitude – and proof of concept in raising additional funds to pay for any deals.

Does this transaction validate the residential model?

We see the clean separation between the YieldCo and DevCo structure for Vivint in the SUNE/TERP acquisition as actually exceptionally appealing, helping to highlight the respective value. At a 9.5% equity yield (net of modest leverage) – and a higher yield pro-forma for future ABS issuance against the assets – we see the first residential drop for TERP as particularly attractive (within 8-10% cash on cash yield guidance). Moreover, we calculate the IRR of this initial acquisition as being a ~9% equity return, among the more attractive levels realized by a YieldCo.

Does this put the pressure for more YieldCos in resi solar sector?

Among further interesting implications from the latest VSLR deal with SUNE, is whether the introduction of the first significant YieldCo presence in this sector (to be followed in future by NRG/NYLD), will force the hand of other large resi players in following their example on the YieldCo structure. We flag improvement in the cost structure may yet prove the decisive factor in determining whether others pursue a YieldCo structure, seeing a more deflationary cost environment (and hence lower equity needs in 2017 w/o the ITC benefits) as reducing the likelihood of a YieldCo. In contrast, the more equity needed per Watt of growth, the more likely peers will follow their example.

Putting Vivint in Context – How to think about cost and growth

We see VSLR as following closely behind the two frontrunners in the space, SCTY and SunRun. We understand cost structure is estimated to decline substantially through the court of 2015, with targets of ~\$2.70-80/Watt, on its way towards ~\$2.50/W in 2017. While margin are likely robust in the near term (\$0.50/W margins assuming YieldCo monetizations at comparable levels vs. the TERP deal), we see a step-down to ~\$0.25-0.50/Watt margin range in 2017+ as the ITC step-down occurs (30% to 10%).

Growth into 2016: Mgmt expects 100% growth deployment

With a 2015 target of 290-310 MWs, management's 100% growth target for 2016 would imply roughly ~600 MWs for 2016. Among the critical questions for investors to become comfortable with in the VSLR transaction are the expected volumetric growth targets for 2016 in the residential rooftop business; we flag sentiment remains relatively constructive in the sector, with few questioning the continued acceleration.

Pricing and Geography: Shifting towards Northeast

We flag VSLR's expansion strategy has increasingly biased Eastwards, with 60% of incremental contracts signed in Northeastern markets, at slightly lower PPA prices (13c/KWH blended average on prospective deals vs. 14c/KWH on cumulative deals) but taking advantage of SREC programs (10-15 years in life).

SUNE mgmt: OpEx/Watt should decline to "beyond world class"

At their last earnings call, Vivint announced that costs increased q/q from \$2.96/W to \$3.21/W, largely due to a ~20% q/q increase in total headcount. Headcount increased across the board: installation costs, sales & marketing costs, and G&A

expenses all rose on a sequential basis. Management stated that they expected total costs to decrease q/q for the remainder of 2015, and maintained '15 cost guidance at \$2.80-\$2.90/W, with expectations for \$2.50/W by 2017.

On the recent call regarding the acquisition, SUNE mgmt said that they expect Vivint's cost structure and cost evolution estimates to remain the same post-acquisition, and specifically highlighted that opex/W should decline to "beyond world class."

We flag that the \$2.50/W figure has been highlighted by other groups (SCTY, in particular). We believe that this is the level installers/developers believe they must reach in order to soften the ITC resi expiration blow and stay competitive into 2017 and beyond.

VSLR OPEX increase outweighs revenue uptick

At its last earnings call, VSLR posted increases in contracted payments and total revenue, but even higher increases in opex caused losses to widen, according to mgmt statements.

SUNE acquisition should accelerate CAFD adoption for resi space

In accordance with the Street's desire to move away from retained value toward CAFD metrics, VSLR indicated that they would be reporting similar metrics to competitors in the quarters to come. We believe the move towards reporting these metrics will be adopted by most, if not all, HoldCo over the next year, and we re-emphasize our view that companies not willing to follow this lead will become increasingly more difficult to comp, which could hurt their valuations. With the acquisition, we feel that SUNE will accelerate Vivint's focus on adoption of CAFD metrics at the resi level.

Looking at the economics for the existing portfolio

We include our estimated economics for the initial portfolio acquired by TERP from VSLR. We estimate an initial IRR on development at ~15%, but a TERP drop-down acquisition IRR of 9%.

- **Stable cash flow profile?** Among the key debates on the transaction is to what degree the residential portfolio actually deliver a flat CAFD profile following statements suggesting a meaningful ramp in the CAFD of SCTY's corresponding profile. Our estimate suggests there is indeed a meaningful ramp in CAFD in the VSLR portfolio, with a jump beyond the Year 7 expiration of tax equity; that said, with the cumulative portfolio having layered in tax equity at various points this could very well provide a bit more of a flattish profile. All-in, we emphasize bottoms up guidance from VSLR ultimately matches with guidance from SUNE for their CAFD when making these adjustments.

Figure 69: Vivint Solar Existing Portfolio (Year-End 2015)

Vivint Solar - Existing Portfolio (Year-End 2015)

Revenues			
PPA	\$0.14	\$/kWh	
SRECs	\$0.03	\$/kWh	Blended with ~40% receiving RECs
	1,300	Hours	Avg Portfolio
	\$0.02	\$/Watt	
	2%	O&M escalator	
	0.5%	Panel degradation	
	2.90%	Revenue escalator	
	40%	SREC Portfolio	
Portfolio	523	MWs	

Total Cost	\$2.75	2015 Guidance
Tax Equity	\$1.75	2015 ~Avg
ST Debt	\$0.70	
Equity	\$0.30	
Monetization Price		
TERP Price	\$962	
Price Implied	\$1.84	
Tax Equity	<u>\$1.75</u>	
Implied Exit	\$3.59	

Year	0	1	2	3	4	5	6	7	8	9	10	30
Revenue (\$/kWh)													
PPA		\$0.14	\$0.14	\$0.15	\$0.15	\$0.15	\$0.16	\$0.16	\$0.17	\$0.17	\$0.17	\$0.18	\$0.18
SREC		0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.02	
		0.17	0.17	0.17	0.18	0.18	0.18	0.19	0.19	0.19	0.20	0.20	0.18
Revs \$/W		0.21	0.22	0.22	0.23	0.23	0.24	0.24	0.25	0.25	0.26	0.26	0.23
Costs		\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.04
Margin (\$/W)		0.19	0.20	0.20	0.21	0.21	0.22	0.22	0.22	0.23	0.23	0.23	0.19
Tax Equity (~35%)		(\$0.07)	(\$0.07)	(\$0.08)	(\$0.08)	(\$0.08)	(\$0.08)	(\$0.08)					
CAFD/W	(\$1.00)	\$0.12	\$0.12	\$0.13	\$0.13	\$0.13	\$0.13	\$0.14	\$0.22	\$0.23	\$0.23	\$0.23	\$0.19
CAFD \$M		\$63.6	\$64.9	\$66.2	\$67.6	\$69.0	\$70.4	\$71.8	\$117.4	\$119.8	\$122.3	\$121.5	\$100.9

10-year Avg CAFD \$M	\$83.29
CAFD	\$81 10-year Avg
Post-Tax Equity Built	\$1.84
IRR on YieldCo Selldown	9.03%
Implied Gross Yield	8.42%
IRR	16%

Source: Company data, UBSe

Figure 70: New Deals – Pre-ITC Scenario

New Deals - Pre-ITC

Revenues		
PPA	\$0.13 \$/kWh	
SRECs	\$0.03 \$/kWh	Blended with ~40% receiving RECs
	1,300 Hours	Avg Portfolio
	0.02 \$/Watt	
	2% O&M escalator	
	0.50% Panel degradation	
	2.90% Revenue escalator	
	40% SREC Portfolio	
Portfolio	523 MWs	

Total Cost	\$2.75	2015 Guidance
Tax Equity	\$1.75	2015 ~Avg
ST Debt	\$0.70	
Equity	\$0.30	
Monetization Price		
TERP Price	\$962.00	
Price Implied	\$1.84	
Tax Equity	<u>\$1.75</u>	
Implied Exit	\$3.59	

Year	0	1	2	3	4	5	6	7	8	9	10	30
Revenue (\$/kWh)													
PPA		0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.15	0.16	0.16	0.16	0.16
SREC		0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.02	0.02	0.02	0.02	
		0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.16
Revs \$/W		0.20	0.21	0.21	0.21	0.22	0.22	0.23	0.23	0.23	0.24	0.24	0.21
Costs		\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.04
Margin (\$/W)		0.18	0.19	0.19	0.19	0.20	0.20	0.20	0.20	0.21	0.21	0.22	0.18
Tax Equity (~35%)		(\$0.07)	(\$0.07)	(\$0.07)	(\$0.07)	(\$0.07)	(\$0.08)	(\$0.08)					
CAFD/W	(\$1.00)	\$0.11	\$0.12	\$0.12	\$0.12	\$0.12	\$0.13	\$0.13	\$0.20	\$0.21	\$0.21	\$0.22	\$0.18

10-year Avg CAFD/W	\$0.15
IRR on DevCo	15%
Implied Monetization	8.42%
Post-Tax Equity Built	\$1.74
Net Margin	\$0.74
Total Build Cost	2.75
Net Margin (%)	27%
IRR on YieldCo Selldown	9%

Source: Company data, UBSe

The net margin below is the basis for our new SunEdison DevCo valuation.

Figure 71: New Deals – Post-ITC Scenario

New Deals - Post-ITC Scenario

Revenues			
PPA	\$0.14	\$/kWh	Scale BACK to more profitable regions
SRECs	\$0.03	\$/kWh	Blended with ~40% receiving RECs
	1,300	Hours	Avg Portfolio
	\$0.02	\$/Watt	
	2%	O&M escalator	
	0.50%	Panel degradation	
	2.90%	Revenue escalator	
	40%	SREC Portfolio	
Portfolio	523	MWs	

Total Cost	\$2.75	2015 Guidance
Tax Equity	\$0.60	2015 ~Avg
ST Debt		
Equity	\$2.15	
Monetization Price		
TERP Price	\$962.00	
Price Implied	\$1.84	
Tax Equity	<u>\$1.75</u>	
Implied Exit	\$3.59	

Year	0	1	2	3	4	5	6	7	8	9	10	11	30
Revenue (\$/kWh)													
PPA	\$0.14	\$0.14	\$0.15	\$0.15	\$0.15	\$0.16	\$0.16		\$0.17	\$0.17	\$0.17	\$0.18	\$0.18
SREC	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.02	0.02	0.02	0.02	
	0.17	0.17	0.17	0.18	0.18	0.18	0.19		0.19	0.19	0.19	0.20	0.18
Revs \$/W	0.21	0.22	0.22	0.23	0.23	0.24	0.24		0.24	0.25	0.25	0.26	0.23
Costs	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02		\$0.02	\$0.02	\$0.02	\$0.02	\$0.04
Margin (\$/W)	0.19	0.20	0.20	0.21	0.21	0.22	0.22		0.22	0.22	0.23	0.23	0.19
Tax Equity (~35%)	(\$0.02)	(\$0.02)	(\$0.02)	(\$0.02)	(\$0.02)	(\$0.02)	(\$0.02)	(\$0.02)					
CAFD/W	(\$1.90)	\$0.17	\$0.17	\$0.18	\$0.18	\$0.19	\$0.19	\$0.20	\$0.22	\$0.22	\$0.23	\$0.23	\$0.19

10-year Avg CAFD/W	\$0.19
IRR on DevCo	10%
Implied Monetization	8.42%
Post-Tax Equity Built	\$2.31
Net Margin	\$0.41
Total Build Cost	2.75
Net Margin (%)	15%
IRR on YieldCo Selldown	8%

Source: Company data, UBSe

Vivint Solar Acquisition

We include guidance for VSLR ahead of pending acquisition by SUNE.

2Q and 2015 guidance

Last quarter, Vivint provided Q2 guidance of 63-67 MW installed, \$14-15m revenue, and \$80-85m total opex. The firm recently reported 73 MW installed in Q2 (beating guidance), and mgmt now expects 290-310 MW in '15, for a cumulative total of ~523 MW by year end.

Figure 72: Vivint Solar's Guidance vs. Historical Results

Guidance for:	2Q15	1Q15	4Q14
MW installed	63-67	40-42	45-47
Revenue	\$14-15M	\$8.0-8.5M	\$5.5-6.5M
Total OpEx	\$80-85M	\$47-50M	\$47-51M
Shares outstanding	105.9M	105.3M	NA

Financial results for:	1Q15	4Q14
MW installed	46	50
Revenue	\$9.5M	\$6.9M
Total OpEx	\$58.2M	\$46.8M
Shares outstanding	109.1M	105.1M

Source: Company data

In 4Q14 and 1Q15, Vivint beat its guidance for installations (MW) and for revenue.

Figure 73: Vivint Solar Financials (\$M)

	2014	2013
Operating leases & incentives	21.688	5.864
Solar energy system & production sales	3.57	0.306
Total revenue	25.258	6.17
Cost of revenue - operating leases & incentives	67.984	19.004
Cost of revenue - solar system & production sales	1.997	0.123
Gross profit - operating leases & incentives	-46.296	-13.14
Gross profit - solar energy system & production sales	1.573	0.183
Gross profit (loss)	-44.723	-12.957
Operating expenses	117.571	38.381
Operating profit (loss)	-162.294	-51.338

Source: Company data

More Background on Vivint

We met with VSLR management in March to get their take on developments in the US residential solar markets. We re-include our original commentary below.

Cost structure remains key to winning residential sector. Management emphasized it would continue to see declines in its cost structure at the same pace as last year (dropping by ~10% YoY), even into '16.

- **What's the capitalization target today?** For its system today, management sees standard residential systems capitalized as follows:
 - **Selling Price = \$4-5/Watt -> Driving Tax equity = ~\$1.70/Watt.** This should sizably decrease with the roll-off of the ITC to 10% from 30% at the end of 2016.
 - **Debt (currently under short-term facility) = ~\$0.70/Watt.** Management anticipates shifting to a securitization effort with sufficient scale.
 - **Equity = ~\$0.50/Watt.** *This is predicated on the \$2.80-2.90 cost structure contemplated for 2015. As costs continue to decline, management suggests the equity funding involved could potentially decline.*
- **Costs in the Northeast:** States like MA which require 2 electricians to attend any installation of solar panels will structurally see higher costs than adjacent regions.
- **Build will be biased towards Summer, particularly for Northeast:** With the company having only executed its IPO mid-last year, the profile of a conventional residential solar installer remains somewhat unclear. Management stressed it would hit its 300MW target in 2016, as it slightly exceeded its 2015 target of 150MW, with 155MW by 12/31. With just 40-42MW contemplated for 1Q, the installs remain highly weighted towards 2Q and 3Q.
- **What's the cost of tax equity?** Management estimates it remains at ~12% (pre-tax), following its latest extension with parties for additional runway. We see this as largely in-line with what peers have discussed of late. We continue to see availability of tax-equity (or its increasing cost) as a key factor to focus on in 2016.
- **Timing for additional equity.** Management specifically highlighted it would not tap equity capital markets in 2015. It stated 2016 was likely at its current pace of installations, seeing the \$300 Mn raised via the IPO as largely exhausted. Management acknowledged that assuming 50c/Watt and ~300MW developed in 2015, would imply ~\$150 Mn of equity needs for development.
- **Blackstone lockup expires soon.** With ~70% of shares still held by Blackstone, management acknowledged upcoming expiration of lock-up post-IPO. We understand there is a further 2-year lockup under the latest deal with SUNE with Blackstone.
- **Cost to acquire customers? Quite competitive with its own door to door system.** Management flagged a typical sales rep was remunerated primarily on commission at a rate of \$0.20/Watt, or paid ~\$1,400 for a typical 7kW system sold. Management projects its all-in 'cost to acquire' at roughly twice this at ~\$0.40/Watt still.

The Renova deal: ~2.2GW of project pipeline

SunEdison previously announced it is buying Light's 15.87% stake in Renova for US\$250m. The deal price represented a 35% premium over Renova's market price on the day it was announced, and will be paid via SunEdison shares.

SUNE's deal with Renova gives 336 MW of operating wind and hydropower assets in Brazil; and also provides a ROFO for 1,870 MW of additional projects (of which 534MW are operating projects and the remainder are contracted backlog projects); plus ROFO for future pipeline projects developed by Renova. SUNE also signed a Letter of Intent to buy a 16% stake in Renova, which gives SUNE the ability to transition the ROFO projects to call right projects at pre-determined (undisclosed) prices.

Figure 74: What SUNE gets from Renova

Generation type	Country	Projects to be acquired near term	Right of First Offer Projects		Total
		Operating Capacity (MW)	Operating Capacity (MW)	Under Development Capacity (MW)	
Wind, Hydropower	Brazil	336	534	1,336	2,206

Source: Company Sources

These assets will be dropped down into TERP Global. The 336MW operating capacity is counted amongst TERP Global's amended initial portfolio.

Lockups: A further capital markets consternation for SUNE

Through the SUNE acquisition of VSLR, Blackstone (a large investor in VSLR) received converts with a 2-year minimum lock-in, and a 5 year window for conversion at a price range between \$27 and \$33/sh. Meanwhile the Brazilian Utility, Light, will be awarded \$250 Mn in SUNE equity upon deal close for its sale of its 16% stake in Renova, worth ~8 Mn shares. As SUNE continues to expand its platform to peers, we appreciate its efforts to limit direct equity issuances, but suspect recent deals could be a further source of overhang on shares following latest deals. We see placement of equity as an increasingly critical question for all YieldCos amidst a skittish market.

Where to from here?

Following recent announcements to round out efforts on storage, SUNE appears to have largely executed on its strategic goals for the time being in terms of development platforms. Rather, the question is to what extent management will opt to complement its development expertise in each of these units. We suspect niche opportunities could yet arise in specific states as well as around any 'shaking out' in a post-2017 world. Overall the two avenues we highlight are:

International market focus to continue: We expect more deals on the lines of that with Renova in Brazil internationally. The two key questions to be updated include both how many MWs will be developed annually as well as how much larger the international business will be?

Newly acquired wind expertise to show: Among the larger updates yesterday was the release of an updated 2016 development projection, increasing the utility-scale by ~250MWs (2.8-3.0GW to 3.0-3.3GW), principally reflecting added

confidence on wind execution. The increase appears principally tied to two separate factors: 1) the addition of international MWs via the FirstWind transaction, a region in which the company had previously had no exposure (as such, a higher development risk in our view); and 2) the addition of MWs tied to incremental domestic wind opportunities not previously realized while the company was in the sales process.

Storage: exploring new avenues

SUNE has also announced plans over 2Q to partner Advanced Microgrid Solutions (AMS) to develop 50MW of storage projects which will be eventually dropped into TERP once completed. The storage project will be used by Southern California Edison under terms of its local capacity requirement (LCR) solicitation.

Additionally, the deal quells some investor concern that SUNE have been too focused on wind, and reinforces mgmt's sentiment that they are looking to pursue all relevant renewable asset classes. The deal with AMS sets the ground work to finance and install 50 MW of behind-the-meter utility-scale battery storage for SoCal Edison to fulfill their Local Capacity Requirement proposal. The assets are expected to be dropped into the TERP vehicle, with construction financing provided by SUNE.

First Wind deal: Digging into the "earnout" component

The \$2.4bn First Wind acquisition price includes \$510 million of earnout payments payable by SUNE subject to completion of certain projects in First Wind's backlog over two-and-a-half years. As part of its upfront consideration \$1.9bn SUNE will issue \$340 million seller note.

A quick look at projects announcements over 2Q

SUNE/ TERP announced deals for nearly 6 GW of operating or ROFO assets in 2Q15. The table below does not include the Vivint deal announced recently (more of a 3Q continuation of the 2Q momentum).

Figure 75: SUNE Project Announcements in 2Q15

Date	Acquirer	MW	Location	Type	Status	Counterparty/ Description
June 29	SUNE/TERP	521	Idaho, OK	Wind	Acquisition	Closing of Atlantic Power acquisition: operating
June 25	TERP	9	US	Solar	Acquisition	Duke Energy Renewables: operating DG solar
June 16	SUNE	242	India	Wind	Acquisition	Continuum Wind Energy: operating wind projects
June 16	SUNE	170	India	Wind	Acquisition	Continuum: wind assets under construction
June 16	SUNE	1,000	India	Wind	Acquisition	Continuum: wind power plants in development
June 16	SUNE	243	Central America	Wind	Acquisition	GME: 4 operating wind power plants
June 16	SUNE	82	Central America	Solar	Acquisition	GME: operating solar power plant
June 4	TERP	23	US	Solar	Acquisition	Integrus: utility-scale solar
May 7	SUNE	336	Brazil	Wind, hydro	Acquisition	Renova portfolio: operating
May 7	SUNE	149	China	Wind	Acquisition	Honiton portfolio: operating
May 7	SUNE	102	India	Wind	Acquisition	FERSA portfolio: operating
May 7	SUNE	73	Peru	Hydro	Acquisition	LAP portfolio: operating
May 7	SUNE	38	India	Solar	Acquisition	Chint portfolio: operating
May 7	SUNE	34	South Africa	Wind, solar	Acquisition	SA portfolio: operating
May 7	SUNE	26	Uruguay	Solar	Acquisition	Solarpack portfolio: operating
May 7	SUNE	2,206	Brazil	Wind, hydro	Acquisition	Renova portfolio: ROFO
May 7	SUNE	120	Peru	Hydro	Acquisition	LAP portfolio: ROFO
May 5	TERP	25	Ontario, Canada	Solar	Acquisition	Invenergy: operating utility-scale solar
TOTAL		5,399				
June 8	SUNE	371	South Africa	Solar	Awarded	5 solar PV projects (REIPPP) awarded
May 21	SUNE	33	Southern CA	Solar	Awarded	Contracts awarded for rooftop solar, 17 plants operational in 2016
May 6	SUNE	86	South Africa	Solar	Awarded	Awarded (REIPPP Programme)
TOTAL		490				
June 16	SUNE	246	Central America	Wind	Under development	Wind under development
May 28	SUNE	14	Long Island, NY	Solar	Under development	Signed agreements for 7 solar power plants
May 12	SUNE	3	Alameda County, CA	Solar	Under development	Agreement to install solar systems, part of second phase of R-REP
April 22	SUNE	3	Winchendon, MA	Solar	Under development	Signed agreement to develop and install power plant
April 9	SUNE	262	Utah	Solar	Under development	Signed agreement to construct and install 3 utility-scale power plants
TOTAL		528				
Grand Total		6,417				

Source: Company Filings

TERP Global: What has management committed?

Management has committed to several targets for this segment:

- **20%** DPS growth for 3-years, consistent with TERP Classic guidance.
- Committed \$1.4 Bn in CAFD from Call Right projects and 'ROFO on Additional Projects from the sponsor'. Additional support to the 20% growth target is derived from the market, via 'Third Party Partners: call Right Projects'.
- **85%** Payout of CAFD to feed dividend.
- **70%** EBITDA margin

Proposed Terms

TERP Global's initial annualized dividend of \$1.10 implies a 5.5% yield on mid-point IPO price range of \$20 (\$19-21) for 2015.

How do we value Emerging markets segment?

We include our segment valuation for our Emerging market segment below. We emphasize our valuation *is not necessarily apples to apples as it does not necessarily include all of the recent emerging market acquisitions, totaling \$1.4 Bn between operating and development platforms*. Some of the proceeds from the spin are contemplated to pay for several of the associated acquisitions for the initial portfolio.

Figure 76: TERP Global Snapshot

\$MM except per share data	2015
Assumed IPO price	\$20
Initial Dividend	\$1.10
Yield	5.5%
Dividend	\$1.10
% Growth	
Outstanding Shares	179
Class A	118
Class B	61
Market Cap	\$3,577
SUNE's Shares (MM)	271
Implied per SUNE \$/Sh	\$13

Source: Company Filings

Figure 77: Implied TERP Global Component of SUNE Valuation

LP Valuation	Downside	Base	Upside
Total Drops (ROFO 3rd party & Development Assi	\$270	\$630	\$630
Existing CAFD	\$232	\$232	\$232
Total CAFD (Projected Achieved by ~2018)	\$501	\$862	\$862
Corporate Interest Post Tax	(\$34)	(\$80)	(\$80)
Net CAFD	\$467	\$782	\$782
Distribution Reserve	20%	20%	20%
Net CAFD	\$374	\$625	\$625
IDR - 2018E	\$114	\$190	\$190
CAFD for LP unitholders	\$260	\$435	\$435
Haircut	0%	0%	0%
CAFD distributed to LP Unitholders	\$260	\$435	\$435
Initial Shares Outstanding	64	64	64
Additional Unit Issued	24	56	56
Total LP Unit Outstanding	88	120	120
LP Distribution per share	\$2.96	\$3.63	\$3.63
YieldCo Peer Yield	6.0%	6.0%	6.0%
(Premium)/Discount	<u>4.0%</u>	<u>3.0%</u>	<u>2.0%</u>
Assumed Yield	10.0%	9.0%	8.0%
LP Value per unit	\$29.6	\$40.3	\$45.4
LP Value per Hypothetical Share			
SUNE ownership	53%	53%	53%
LP Value (\$ Mn)	\$1,379.6	\$2,566.5	\$2,887.4
LP Value to SUNE	\$4.12	\$7.66	\$8.61

Source: Company Filings and UBS Estimates

Breaking down the development business SOP at SUNE

Central to the focus on the Vivint acquisition has been scrutiny around how to think about the DevCo valuation segment. We see all of the value from the Vivint DevCo deal ultimately accruing to this segment (\$1.277 Bn \approx \$4/sh). Our valuation below effectively values the business at \sim 600MWs x \$0.40/W margin = \sim \$1.2 Bn, effectively breakeven on the price paid. We appreciate that SUNE's remaining DG business could well be a tad lower margin.

A key uncertainty pending updates from management remains the consolidated Opex guidance of \$765 Mn, initially provided at the time of the Capital Markets Analyst day.

Our updated DevCo value below explicitly breaks apart the DG and utility-scale segment. We assume relatively implied gross margins, but thought it more appropriate to break apart these businesses. We had previously collapsed the entire 4.1GW development pipeline into a single line-item. The change in the composition of our DevCo valuation does *not* change our price target from \$39.

We emphasize the \$0.40/Watt applied in the valuation below reflects a conservative assumption vs. *actual* realized margins in 2016 to reflect a litany of factors:

- More realistic sustainable margins in 2017+ without the ITCs for residential projects. Please see our breakdown of Vivint post-ITC economics for reconciliation of \sim \$0.40/W margins.
- Conservatism on C&I margins realized by SUNE portion of pipeline (\sim 500 MWs)

Figure 78: Revised DevCo Value

DevCo Value --> Step-up Value as Dropped from SUNE to TERP	Downside	Base Case	Upside
Utility-Scale Capacity Built (GW) - 2016	2,100	3,100	4,100
<i>Total Guidance for 2016</i>		4200-4500	
<i>Implied Utility-Scale Guidance</i>		3100-3200	
\$/Watt Costs	2.00	2.00	2.00
Margin (%)	17%	18%	19%
Utility-Scale Gross Margin (\$ Mn)	714	1,116	1,558
DG Capacity Built (GW) - 2016	600	1,100	1,300
<i>Guidance for 2016</i>		1100-1300	
Build Costs (\$/W)	2.70	2.70	2.70
Margin (\$/Watt) - Weighted down to reflect 2017 stepdown	0.20	0.40	0.60
<i>Implied Margin (%)</i>	7%	15%	22%
DG Gross Margin (\$ Mn)	120	440	780
Opex	(765)	(765)	(765)
EBITDA	-51	791	793
EV/EBITDA-> 4-6x Range... Discounted given uncertainty	5.0x	5.0x	5.0x
Implied Value	(255)	3,955	3,965
Implied Value (\$/kW-yr)	(24)	1.28	193
Value of to SUNE	(\$0.76)	\$11.80	\$11.83

Source: UBS estimates

Valuation: Maintain Buy; \$39 PT

We maintain our SOTP based share price target at \$39 which factors in the increase in MW capacity coming through from recent deals at both SUNE and also TERP and Terraform Global. We show our breakdown of the PT below:

Figure 79: SUNE SOTP Valuation

SunEdison Valuation UBSe				
TERP LP Ownership Interest		Downside	Base Case	Upside
TERP LP Value to SUNE		\$5.45	\$9.77	\$13.72
Current Share Price (for Comparison) - and Corresponding Value/sh		\$41.00		
		\$7.70		
TERP GP Ownership Interest		Downside	Base Case	Upside
TERP GP Value to SUNE		\$8.08	\$14.27	\$17.83
Non-TERP Projects Sold to Third Parties		Downside	Base Case	Upside
Value of to SUNE		\$0.25	\$0.33	\$0.42
Emerging Markets YieldCo (EMYCo)		Downside	Base Case	Upside
YieldCo Valuation (Assuming ~ownership of Initial Portfolio Only)		\$4.12	\$7.66	\$8.61
Incentive Distribution Rights from YieldCo		\$0.00	\$4.73	\$8.15
Value of to SUNE		\$4.12	\$12.38	\$16.76
Remaining Ownership in Semiconductors		Shares (Mn)	Public Price	Value
Value of to SUNE		\$0.43	\$1.56	\$2.34
SMP poly Plant		Downside	Base Case	Upside
Value of to SUNE		\$0.46	\$0.66	\$0.86
DevCo Value --> Step-up Value as Dropped from SUNE to TERP		Downside	Base Case	Upside
Value of to SUNE		(\$0.76)	\$11.80	\$11.83
Parent Obligations		Value/Sh.		
		Outstanding	Converted	
Total Converts		\$2,810	\$914	
Other non-solar energy system recourse debt		\$215		
Solar Energy recourse financing		\$40		
Total Recourse Debt		\$3,065		
Margin Loan - w / TERP Shares		\$410		
Sellers Note due 2020 collateralized w / TERP Shares		\$337		
Non-Recourse 1st Lien Term Loan from Vivint Acquisition		\$500		
Grand Total Debt		\$4,312		
Cash Outstanding		(\$944)		
Proceeds Raised from 2Q Proceeds		(\$747)		
Acquisition: TERP Global Assets (UBSe for Operating and Dev Pipeline) - All Acquisitions ~		\$1,400		
Acquisition: TERP Global Assets Dev Pipeline ?		\$0		
Net Debt		\$4,021		
YieldCo Acquisition / Warehouse Facility		Outstanding	Size	
TerraForm Global YieldCo acquisition facility		\$0		
TERP Warehouse Facility		\$0	\$1,500	
Total Warehouse		\$0		
LC Facility		\$0	\$540	
Grand Total Obligations		\$4,021		
Grand Total Obligations per Share		\$12.00		
Value of to SUNE		(\$12.00)		
SUNE Equity Value per Share		\$6.67	\$39.43	\$52.40
Upside/(Downside)		-75%	50%	99%

Source: Company Filings, UBSe

TerraForm Power

Higher MWs from drop-downs, higher fleet capacity factor and larger MWh contributions from higher-margin solar to drive 2Q performance

We estimate ~1.8GW installed operational capacity contributing over 2Q, vs. ~1.7GW installed at the end of 1Q. Although ~200MWs were acquired/dropped down into TERP over 2Q, our MW assumption adjusts for the fact that from a modeling perspective most of the SUNE drops over the quarter would a very late in the quarter. Our 2Q expectations also incorporate a 15% higher fleet capacity factor vs. ~22% in 1Q assuming usual fleet trends over the first two quarters; also contributing to higher revenues over the quarter.

Figure 80: TERP 2Q15 expectations vs 2Q14 and 1Q15

	2Q14	1Q15	2Q15	FY2015 UBSe	FY2015 Mgmt Guidance
Operational Installed Capacity	322	1,655	1,822	2431	
Fleet utilization rates	21%	21%	36%	21%	
Ouput (GWh)	145	602	975	5,295	
Total Revenue	\$22	\$71	\$116	\$507	
EBITDA	\$8	\$20	\$62	\$393	\$382
CAFD		\$39	\$45	\$224	\$225

Source: Company sources, UBS estimates

Key incremental issues we've been thinking about

How to think about average CAFD from Vivint

VSLR's 523 MW contracted rooftop solar portfolio will be dropped into TERP where mgmt. estimates an incremental \$81mn 10-year average unlevered CAFD. We estimate a \$69.6 levered CAFD assuming a 5.5% cost of debt for the \$225mn debt issued at TERP for the deal (which equates to a ~9.5% cash on cash yield).

To think of cash flow profile, generally it will be lower in the earlier years and higher in the outer years because of a larger tax equity bite early on. Mgmt expects a substantial uplift in later years as tax equity goes (average tenor of tax equity is 7 yrs). The other variable impacting the cash flow profile are the SRECs, which won't last over the entire project PPA life; the SREC cash inflows (which can also be very substantial upfront) can be expected to disappear after ~10 years. Mgmt expects the increasing tax equity cash profile and decreasing SREC cash profile in the outer years to balance each other out, followed by a higher (+2%) CAFD which is impacted solely by the PPA escalators.

While the Invenergy deal produced an 8.4% cash-on-cash yield, the 9.5% yield for TERP in the VSLR acquisition highlights the higher yields seen in the resi space, and reflects the value that VSLR can add to TERP as their capabilities are built out. Management has committed to pursuing acquisitions in the 8-10% levered cash-on-cash yield range, making the latest at the higher end by our estimates, and consistent with the perceived higher risk associated with the execution.

Tax equity: larger bite in earlier years, stopping year 7

SREC: higher inflows earlier years, stopping year 10

CAFD beyond year 10 should increase based solely on 2% escalators

Figure 81: Cash-on-Cash Yield Breakdown

TERP Equity	\$737
Terp Debt	\$225
Cost of Debt	5%
Interest	\$11.25
Total Annualized CAFD	\$81
CAFD From Equity	\$69.75
Cash-on-Cash Yield	9.5%

Source: Company Filings, UBSe

Incremental focus towards wind too; becoming a bit of a theme

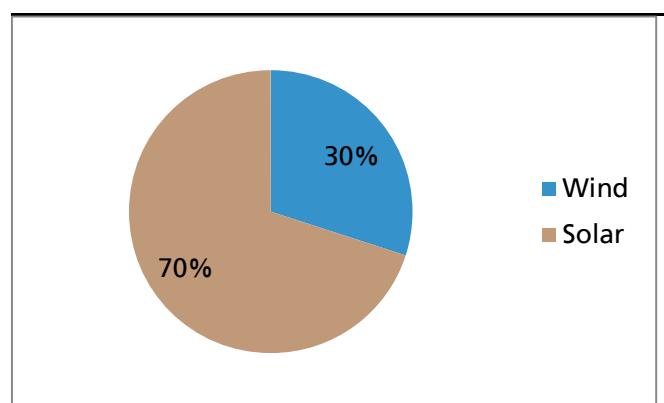
In early July TERP announced a net 930MW acquisition of wind assets from Invenergy for \$2.1Bn; which contributes an estimated \$141Mn average CAFD. TERP guided to an 8.4% equity yield for the deal (mgmt guidance suggests levered IRR is similar) with Invenergy retaining a 9.9% ownership stake. 460MW will be purchased directly at TERP upon closing (expected by 4Q) with the remaining 470MW retained in a new warehouse facility to provide visibility for future growth.

While FirstWind added wind exposure, Invenergy goes further by adding 'mainland' wind (42% in Illinois) and further diversification from the solar-heavy SunEdison. The 9.9% interest retained by Invenergy will eventually be acquired but we would not be surprised to see SUNE/TERP transact with them once again (albeit no ROFO agreement is likely given Invenergy's aversion). Of the 930MW only 93MW (Prairie Breeze III in the warehouse) will be under construction upon the deal closing, providing more operating assets for TERP, directly addressing investors' concerns about developmental risk vs NextEra Energy Partners (and potentially leading to a tightening of the yield).

Below we show asset mix by tech type for YieldCos.

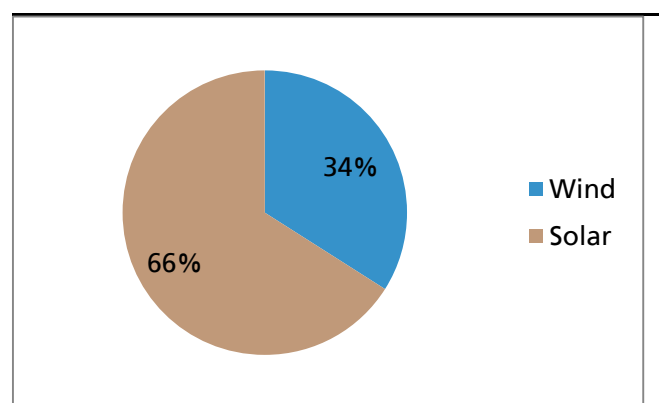
We think focus on wind will continue across all YieldCos

Figure 82: TERP: Operating portfolio



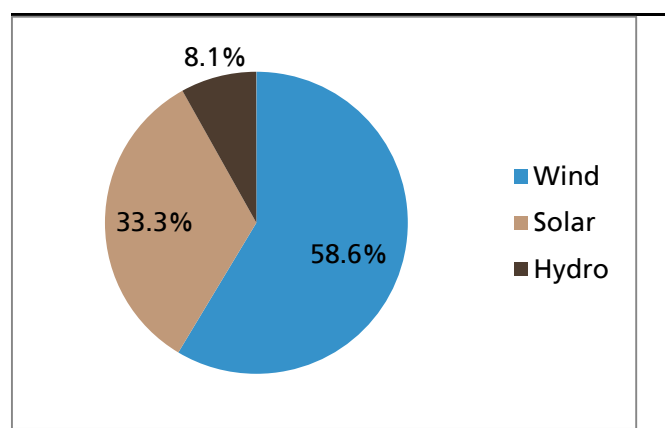
Source: Company sources

Figure 83: TERP: Drop down portfolio



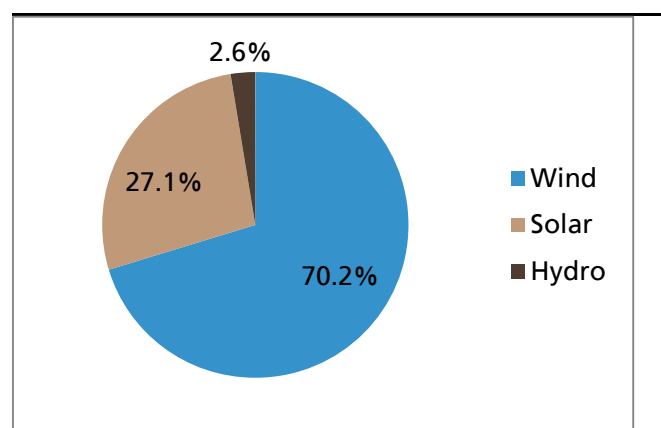
Source: Company sources

Figure 84: TERP EM YieldCo: Initial portfolio



Source: Company sources

Figure 85: TERP EM YieldCo: Call Right Projects and Third-Party Call Right Projects



Source: Company sources

A bit of Storage thrown into the mix too

SUNE has also announced plans over 2Q to partner Advanced Microgrid Solutions (AMS) to develop 50MW of storage projects which will be eventually dropped into TERP once completed. The storage project will be used by Southern California Edison under terms of its local capacity requirement (LCR) solicitation.

We think storage may indeed have a bigger share of the pie over the near to medium term, as adoption increases

Equity needs: Potentially a 2H16 eventuality

Mgmt told us they have numerous projects lined up, which TERP may potentially buy from SUNE late this year/Jan 2016; although we anticipate these may require some need to raise equity, mgmt. may also decide to pay for using the standing revolver, which may be then and repaid using equity raised later on in 2016.

Valuation

We maintain our \$52/sh, which incorporates the accretion derived from the recent portfolio acquisitions, specifically Invenergy & VSLR.

Figure 86: TERP Valuation

TerraForm Power (TERP) Valuation - 2018E	Downside	Base Case	Upside
Run-Rate CAFD 2015	\$219	\$219	\$219
IPO Portfolio	\$107	\$107	\$107
SUNE Drop-Dow ns	\$13	\$13	\$13
Third Party Acquisitions	\$99	\$99	\$99
Total Run-Rate CAFD 2015	\$219	\$219	\$219
Sponsor Drop Down			
Leads (5% Prob.)	\$0	\$0	\$224
Qualified Leads (20% Prob.)	\$0	\$0	\$253
Pipeline (60% Prob.)	\$0	\$203	\$203
Backlog (90% Prob.)	\$707	\$707	\$707
Acquisitions and Other ROFOs	\$253	\$253	\$253
Total Call Right Projects & ROFO	\$960	\$1,163	\$1,639
Gross Cash Available for Distribution (CAFD)	\$1,179	\$1,381	\$1,858
Corporate Interest (Post Tax)	(\$149)	(\$175)	(\$235)
Total Net CAFD (Pre-Reserve)	\$1,029	\$1,206	\$1,622
Distribution Reserve (1-Payout)	15.0%	15.0%	15.0%
Net CAFD	\$875	\$1,025	\$1,379
GP Take - 2018E	\$146	\$163	\$230
CAFD Available for LP Unit holders	\$729	\$862	\$1,149
Haircut	15.0%	15.0%	15.0%
CAFD Distributed to LP Unit holders	\$620	\$733	\$977
Initial A & B Share count (Mn)	112.7	112.7	112.7
Incremental ROFO Shares (Mn)	145.6	122.8	153.9
Est. Shares Count (Mn)	258	236	267
Net CAFD per Share, pre IDRs	\$3.39	\$4.35	\$5.17
Distribution Per Share (DPS)	\$2.40	\$3.11	\$3.66
Peer Yield	6.0%	6.0%	6.0%
(Premium) / Discount	33.6%	0.0%	-16.8%
Assumed Yield for TERP	8.0%	6.0%	5%
Valuation	\$30.00	\$52.00	\$74.00
Upside/Downside to Current Price	-19%	40%	99%

Source: Company Filings, UBSe

Appendix: Select Recent Transactions

Below we present a summary of select recent YieldCo transactions indicating that recent drop-downs have been around ~9x EV / EBITDA with some individual variances due to factors such as the strength of cash flows and underlying debt characteristics.

Figure 87: Summary of Recent YieldCo Drops/Deals

Summary of YieldCo Drops/Deals	
Asset Drops	EV / EBITDA
NRG Yield Drop #1	10.0x
NRG Yield Drop #2	10.2x
Remaining NYLD Drops	11.2x
NYLD-Alta Wind Deal	11.2x
NEP ROFO Drops	11.0x
NEP Drop #1	7.7x
Remaining NEP Drops	9.0x
TERP-First Wind Deal	9.2x
Abengoa Yield Drop #1	9.2x

Source: Company Filings and UBS Estimates

Appendix: Relevant Recent Solar Research

A barrage of equity
Breaking new boundaries?
Tracing the Solar Opportunity Up and Downstream
Can the Sun ever Rise on a Solar REIT?
Where's the West On Renewable Procurement? ...
YieldCos: Follow the Leader?
The C&I Solar Opportunity: Risks vs. Returns ...
The Final Frontier on Resi Solar
Champagne Supernova
Rooftop Solar IPO Race
Preparing for the California Rate Design Shift
Sizing Up the US Solar Market
Video: Sizing Up the US Solar Market
Does the future of solar belong with Utilities?
Breaking Down the Post ITC Economics
A New Take on Resi Solar: A Look at the Community Opportunity
NRG Yield: Paving the Road with Solar ([NRG's Solar](#))
SUNE: Poised to Perform
How Economic Is Residential Solar? ([A Look at Economics by State](#))
Joining the YieldCo Party ([Other YieldCo Candidates](#))
A Vivid View on Residential Solar Trends ([Residential Trends](#))

Statement of Risk

Demand for solar is still largely dependent on individual country government intervention through tax rebates or tariffs although dramatic reductions in installed costs are changing those dynamics. Any material change in an individual country's position on support for solar energy could have a negative impact on the growth of the solar market. The solar industry is also in a state of flux as demand for solar modules has not kept up with capacity additions in over the last few years while regulatory matters and trade disputes create pricing distortions in certain markets. We expect the solar equipment industry will generally face pressure in the near term as industry supply adjusts to fluctuating supply/demand levels and excess inventory is removed from the solar supply chain. On the other hand, the increased presence of yield vehicles has brought cheaper financing to solar and has thus increased opportunities for solar installations globally, increasing module demand and setting the stage for a potential upcycle and mid-term volatility as the markets find equilibrium.

Required Disclosures

This report has been prepared by UBS Securities LLC, an affiliate of UBS AG. UBS AG, its subsidiaries, branches and affiliates are referred to herein as UBS.

For information on the ways in which UBS manages conflicts and maintains independence of its research product; historical performance information; and certain additional disclosures concerning UBS research recommendations, please visit www.ubs.com/disclosures. The figures contained in performance charts refer to the past; past performance is not a reliable indicator of future results. Additional information will be made available upon request. UBS Securities Co. Limited is licensed to conduct securities investment consultancy businesses by the China Securities Regulatory Commission.

Analyst Certification: Each research analyst primarily responsible for the content of this research report, in whole or in part, certifies that with respect to each security or issuer that the analyst covered in this report: (1) all of the views expressed accurately reflect his or her personal views about those securities or issuers and were prepared in an independent manner, including with respect to UBS, and (2) no part of his or her compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by that research analyst in the research report.

UBS Investment Research: Global Equity Rating Definitions

12-Month Rating	Definition	Coverage ¹	IB Services ²
Buy	FSR is > 6% above the MRA.	45%	36%
Neutral	FSR is between -6% and 6% of the MRA.	42%	32%
Sell	FSR is > 6% below the MRA.	13%	20%
Short-Term Rating	Definition	Coverage ³	IB Services ⁴
Buy	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	less than 1%	less than 1%
Sell	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	less than 1%	less than 1%

Source: UBS. Rating allocations are as of 30 June 2015.

1:Percentage of companies under coverage globally within the 12-month rating category. 2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.

3:Percentage of companies under coverage globally within the Short-Term rating category. 4:Percentage of companies within the Short-Term rating category for which investment banking (IB) services were provided within the past 12 months.

KEY DEFINITIONS: **Forecast Stock Return (FSR)** is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months. **Market Return Assumption (MRA)** is defined as the one-year local market interest rate plus 5% (a proxy for, and not a forecast of, the equity risk premium). **Under Review (UR)** Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation. **Short-Term Ratings** reflect the expected near-term (up to three months) performance of the stock and do not reflect any change in the fundamental view or investment case. **Equity Price Targets** have an investment horizon of 12 months.

EXCEPTIONS AND SPECIAL CASES: **UK and European Investment Fund ratings and definitions are:** **Buy:** Positive on factors such as structure, management, performance record, discount; **Neutral:** Neutral on factors such as structure, management, performance record, discount; **Sell:** Negative on factors such as structure, management, performance record, discount. **Core Banding Exceptions (CBE):** Exceptions to the standard +/-6% bands may be granted by the Investment Review Committee (IRC). Factors considered by the IRC include the stock's volatility and the credit spread of the respective company's debt. As a result, stocks deemed to be very high or low risk may be subject to higher or lower bands as they relate to the rating. When such exceptions apply, they will be identified in the Company Disclosures table in the relevant research piece.

Research analysts contributing to this report who are employed by any non-US affiliate of UBS Securities LLC are not registered/qualified as research analysts with the NASD and NYSE and therefore are not subject to the restrictions contained in the NASD and NYSE rules on communications with a subject company, public appearances, and trading securities held by a research analyst account. The name of each affiliate and analyst employed by that affiliate contributing to this report, if any, follows.

UBS Securities LLC: Julien Dumoulin-Smith; Michael Weinstein; Paul Zimbardo.

Company Disclosures

Company Name	Reuters	12-month rating	Short-term rating	Price	Price date
8Point3 Energy Partners LP ¹⁶	CAFD.O	Neutral	N/A	US\$16.82	23 Jul 2015
Dominion Resources ^{2, 4, 5, 6a, 6b, 6c, 7, 16}	D.N	Buy	N/A	US\$68.23	23 Jul 2015
First Solar Inc ^{13, 16}	FSLR.O	Neutral	N/A	US\$42.74	23 Jul 2015
Hannon Armstrong Sustainable Infrastruct ^{2, 4, 6a, 13, 16}	HASI.N	Buy	N/A	US\$20.43	23 Jul 2015
NextEra Energy ^{2, 4, 6a, 6c, 7, 16}	NEE.N	Buy	N/A	AUS\$102.07	23 Jul 2015
NextEra Energy Partners LP ^{2, 4, 5, 6a, 16}	NEP.N	Neutral	N/A	US\$35.47	23 Jul 2015
NRG Energy Inc. ¹⁶	NRG.N	Buy	N/A	US\$21.65	23 Jul 2015
NRG Yield ¹⁶	NYLDa.N	Neutral	N/A	US\$19.53	23 Jul 2015
Southern Company ^{2, 4, 6a, 16}	SO.N	Sell	N/A	US\$42.98	23 Jul 2015
SunEdison Inc. ^{13, 16}	SUNE.N	Buy	N/A	US\$26.30	23 Jul 2015
SunPower Corp ¹⁶	SPWR.O	Neutral	N/A	US\$25.63	23 Jul 2015
TerraForm Power, Inc. ^{2, 4, 5, 6a, 16}	TERP.O	Buy	N/A	US\$31.90	23 Jul 2015

Source: UBS. All prices as of local market close.

Ratings in this table are the most current published ratings prior to this report. They may be more recent than the stock pricing date

2. UBS AG, its affiliates or subsidiaries has acted as manager/co-manager in the underwriting or placement of securities of this company/entity or one of its affiliates within the past 12 months.
4. Within the past 12 months, UBS AG, its affiliates or subsidiaries has received compensation for investment banking services from this company/entity or one of its affiliates.
5. UBS AG, its affiliates or subsidiaries expect to receive or intend to seek compensation for investment banking services from this company/entity within the next three months.
- 6a. This company/entity is, or within the past 12 months has been, a client of UBS Securities LLC, and investment banking services are being, or have been, provided.
- 6b. This company/entity is, or within the past 12 months has been, a client of UBS Securities LLC, and non-investment banking securities-related services are being, or have been, provided.
- 6c. This company/entity is, or within the past 12 months has been, a client of UBS Securities LLC, and non-securities services are being, or have been, provided.
7. Within the past 12 months, UBS Securities LLC has received compensation for products and services other than investment banking services from this company/entity.
13. UBS AG, its affiliates or subsidiaries beneficially owned 1% or more of a class of this company's common equity securities as of last month's end (or the prior month's end if this report is dated less than 10 days after the most recent month's end).
16. UBS Securities LLC makes a market in the securities and/or ADRs of this company.

For a complete set of disclosure statements associated with the companies discussed in this report, including information on valuation and risk, please contact UBS Securities LLC, 1285 Avenue of Americas, New York, NY 10019, USA, Attention: Publishing Administration.

Unless otherwise indicated, please refer to the Valuation and Risk sections within the body of this report.

Additional Prices: Trina Solar, US\$9.24 (23 Jul 2015); SolarCity Corp, US\$53.67 (23 Jul 2015); Source: UBS. All prices as of local market close.

Global Disclaimer

This document has been prepared by UBS Securities LLC, an affiliate of UBS AG. UBS AG, its subsidiaries, branches and affiliates are referred to herein as UBS.

Global Research is provided to our clients through UBS Neo, the UBS Client Portal and UBS.com (each a "System"). It may also be made available through third party vendors and distributed by UBS and/or third parties via e-mail or alternative electronic means. The level and types of services provided by Global Research to a client may vary depending upon various factors such as a client's individual preferences as to the frequency and manner of receiving communications, a client's risk profile and investment focus and perspective (e.g. market wide, sector specific, long-term, short-term, etc.), the size and scope of the overall client relationship with UBS and legal and regulatory constraints.

When you receive Global Research through a System, your access and/or use of such Global Research is subject to this Global Research Disclaimer and to the terms of use governing the applicable System.

When you receive Global Research via a third party vendor, e-mail or other electronic means, your use shall be subject to this Global Research Disclaimer and to UBS's Terms of Use/Disclaimer (<http://www.ubs.com/global/en/legalinfo2/disclaimer.html>). By accessing and/or using Global Research in this manner, you are indicating that you have read and agree to be bound by our Terms of Use/Disclaimer. In addition, you consent to UBS processing your personal data and using cookies in accordance with our Privacy Statement (<http://www.ubs.com/global/en/legalinfo2/privacy.html>) and cookie notice (<http://www.ubs.com/global/en/homepage/cookies/cookie-management.html>).

If you receive Global Research, whether through a System or by any other means, you agree that you shall not copy, revise, amend, create a derivative work, transfer to any third party, or in any way commercially exploit any UBS research provided via Global Research or otherwise, and that you shall not extract data from any research or estimates provided to you via Global Research or otherwise, without the prior written consent of UBS.

For access to all available Global Research on UBS Neo and the Client Portal, please contact your UBS sales representative.

This document is for distribution only as may be permitted by law. It is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or would subject UBS to any registration or licensing requirement within such jurisdiction. It is published solely for information purposes; it is not an advertisement nor is it a solicitation or an offer to buy or sell any financial instruments or to participate in any particular trading strategy. No representation or warranty, either expressed or implied, is provided in relation to the accuracy, completeness or reliability of the information contained in this document ('the Information'), except with respect to Information concerning UBS. The Information is not intended to be a complete statement or summary of the securities, markets or developments referred to in the document. UBS does not undertake to update or keep current the Information. Any opinions expressed in this document may change without notice and may differ or be contrary to opinions expressed by other business areas or groups of UBS. Any statements contained in this report attributed to a third party represent UBS's interpretation of the data, information and/or opinions provided by that third party either publicly or through a subscription service, and such use and interpretation have not been reviewed by the third party.

Nothing in this document constitutes a representation that any investment strategy or recommendation is suitable or appropriate to an investor's individual circumstances or otherwise constitutes a personal recommendation. Investments involve risks, and investors should exercise prudence and their own judgement in making their investment decisions. The financial instruments described in the document may not be eligible for sale in all jurisdictions or to certain categories of investors. Options, derivative products and futures are not suitable for all investors, and trading in these instruments is considered risky. Mortgage and asset-backed securities may involve a high degree of risk and may be highly volatile in response to fluctuations in interest rates or other market conditions. Foreign currency rates of exchange may adversely affect the value, price or income of any security or related instrument referred to in the document. For investment advice, trade execution or other enquiries, clients should contact their local sales representative.

The value of any investment or income may go down as well as up, and investors may not get back the full (or any) amount invested. Past performance is not necessarily a guide to future performance. Neither UBS nor any of its directors, employees or agents accepts any liability for any loss (including investment loss) or damage arising out of the use of all or any of the Information.

Any prices stated in this document are for information purposes only and do not represent valuations for individual securities or other financial instruments. There is no representation that any transaction can or could have been effected at those prices, and any prices do not necessarily reflect UBS's internal books and records or theoretical model-based valuations and may be based on certain assumptions. Different assumptions by UBS or any other source may yield substantially different results.

This document and the Information are produced by UBS as part of its research function and are provided to you solely for general background information. UBS has no regard to the specific investment objectives, financial situation or particular needs of any specific recipient. In no circumstances may this document or any of the Information be used for any of the following purposes:

- (i) valuation or accounting purposes;
- (ii) to determine the amounts due or payable, the price or the value of any financial instrument or financial contract; or
- (iii) to measure the performance of any financial instrument.

By receiving this document and the Information you will be deemed to represent and warrant to UBS that you will not use this document or any of the Information for any of the above purposes or otherwise rely upon this document or any of the Information.

Research will initiate, update and cease coverage solely at the discretion of UBS Investment Bank Research Management. The analysis contained in this document is based on numerous assumptions. Different assumptions could result in materially different results. The analyst(s) responsible for the preparation of this document may interact with trading desk personnel, sales personnel and other parties for the purpose of gathering, applying and interpreting market information. UBS relies on information barriers to control the flow of information contained in one or more areas within UBS into other areas, units, groups or affiliates of UBS. The compensation of the analyst who prepared this document is determined exclusively by research management and senior management (not including investment banking). Analyst compensation is not based on investment banking revenues; however, compensation may relate to the revenues of UBS Investment Bank as a whole, of which investment banking, sales and trading are a part.

For financial instruments admitted to trading on an EU regulated market: UBS AG, its affiliates or subsidiaries (excluding UBS Securities LLC) acts as a market maker or liquidity provider (in accordance with the interpretation of these terms in the UK) in the financial instruments of the issuer save that where the activity of liquidity provider is carried out in accordance with the definition given to it by the laws and regulations of any other EU jurisdictions, such information is separately disclosed in this document. For financial instruments admitted to trading on a non-EU regulated market: UBS may act as a market maker save that where this activity is carried out in the US in accordance with the definition given to it by the relevant laws and regulations, such activity will be specifically disclosed in this document. UBS may have issued a warrant the value of which is based on one or more of the financial instruments referred to in the document. UBS and its affiliates and employees may have long or short positions, trade as principal and buy and sell in instruments or derivatives identified herein; such transactions or positions may be inconsistent with the opinions expressed in this document.

United Kingdom and the rest of Europe: Except as otherwise specified herein, this material is distributed by UBS Limited to persons who are eligible counterparties or professional clients. UBS Limited is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. **France:** Prepared by UBS Limited and distributed by UBS Limited and UBS Securities France S.A. UBS Securities France S.A. is regulated by the ACPR (Autorité de Contrôle Prudentiel et de Résolution) and the Autorité des Marchés Financiers (AMF). Where an analyst of UBS Securities France S.A. has contributed to this document, the document is also deemed to have been prepared by UBS Securities France S.A. **Germany:** Prepared by UBS Limited and distributed by UBS Limited and UBS Deutschland AG. UBS Deutschland AG is regulated by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin). **Spain:** Prepared by UBS Limited and distributed by UBS Limited and UBS Securities España SV, SA. UBS Securities España SV, SA is regulated by the Comisión Nacional del Mercado de Valores (CNMV). **Turkey:** Distributed by UBS Limited. No information in this document is provided for the purpose of offering, marketing and sale by any means of any capital market instruments and services in the Republic of Turkey. Therefore, this document may not be considered as an offer made or to be made to residents of the Republic of Turkey. UBS AG is not licensed by the Turkish Capital Market Board under the provisions of the Capital Market Law (Law No. 6362). Accordingly, neither this document nor any other offering material related to the instruments/services may be utilized in connection with providing any capital market services to persons within the Republic of Turkey without the prior approval of the Capital Market Board. However, according to article 15 (d) (ii) of the Decree No. 32, there is no restriction on the purchase or sale of the securities abroad by residents of the Republic of Turkey. **Poland:** Distributed by UBS Limited (spółka z ograniczoną odpowiedzialnością) Oddział w Polsce regulated by the Polish Financial Supervision Authority. Where an analyst of UBS Limited (spółka z ograniczoną odpowiedzialnością) Oddział w Polsce has contributed to this

document, the document is also deemed to have been prepared by UBS Limited (spółka z ograniczoną odpowiedzialnością) Oddział w Polsce. **Russia:** Prepared and distributed by UBS Bank (OOO). **Switzerland:** Distributed by UBS AG to persons who are institutional investors only. UBS AG is regulated by the Swiss Financial Market Supervisory Authority (FINMA). **Italy:** Prepared by UBS Limited and distributed by UBS Limited and UBS Italia Sim S.p.A. UBS Italia Sim S.p.A. is regulated by the Bank of Italy and by the Commissione Nazionale per le Società e la Borsa (CONSOB). Where an analyst of UBS Italia Sim S.p.A. has contributed to this document, the document is also deemed to have been prepared by UBS Italia Sim S.p.A. **South Africa:** Distributed by UBS South Africa (Pty) Limited (Registration No. 1995/011140/07), an authorised user of the JSE and an authorised Financial Services Provider (FSP 7328). **Israel:** This material is distributed by UBS Limited. UBS Limited is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. UBS Securities Israel Ltd is a licensed Investment Marketer that is supervised by the Israel Securities Authority (ISA). UBS Limited and its affiliates incorporated outside Israel are not licensed under the Israeli Advisory Law. UBS Limited is not covered by insurance as required from a licensee under the Israeli Advisory Law. UBS may engage among others in issuance of Financial Assets or in distribution of Financial Assets of other issuers for fees or other benefits. UBS Limited and its affiliates may prefer various Financial Assets to which they have or may have Affiliation (as such term is defined under the Israeli Advisory Law). Nothing in this Material should be considered as investment advice under the Israeli Advisory Law. This Material is being issued only to and/or is directed only at persons who are Eligible Clients within the meaning of the Israeli Advisory Law, and this material must not be relied on or acted upon by any other persons. **Saudi Arabia:** This document has been issued by UBS AG (and/or any of its subsidiaries, branches or affiliates), a public company limited by shares, incorporated in Switzerland with its registered offices at Aeschenvorstadt 1, CH-4051 Basel and Bahnhofstrasse 45, CH-8001 Zurich. This publication has been approved by UBS Saudi Arabia (a subsidiary of UBS AG), a Saudi closed joint stock company incorporated in the Kingdom of Saudi Arabia under commercial register number 1010257812 having its registered office at Tatweer Towers, P.O. Box 75724, Riyadh 11588, Kingdom of Saudi Arabia. UBS Saudi Arabia is authorized and regulated by the Capital Market Authority to conduct securities business under license number 08113-37. **Dubai:** The information distributed by UBS AG Dubai Branch is intended for Professional Clients only and is not for further distribution within the United Arab Emirates. **United States:** Distributed to US persons by either UBS Securities LLC or by UBS Financial Services Inc., subsidiaries of UBS AG; or by a group, subsidiary or affiliate of UBS AG that is not registered as a US broker-dealer (a 'non-US affiliate') to major US institutional investors only. UBS Securities LLC or UBS Financial Services Inc. accepts responsibility for the content of a document prepared by another non-US affiliate when distributed to US persons by UBS Securities LLC or UBS Financial Services Inc. All transactions by a US person in the securities mentioned in this document must be effected through UBS Securities LLC or UBS Financial Services Inc., and not through a non-US affiliate. **Canada:** Distributed by UBS Securities Canada Inc., a registered investment dealer in Canada and a Member-Canadian Investor Protection Fund, or by another affiliate of UBS AG that is registered to conduct business in Canada or is otherwise exempt from registration. **Brazil:** Except as otherwise specified herein, this material is prepared by UBS Brasil CCTVM S.A. to persons who are eligible investors residing in Brazil, which are considered to be: (i) financial institutions, (ii) insurance firms and investment capital companies, (iii) supplementary pension entities, (iv) entities that hold financial investments higher than R\$300,000.00 and that confirm the status of qualified investors in written, (v) investment funds, (vi) securities portfolio managers and securities consultants duly authorized by Comissão de Valores Mobiliários (CVM), regarding their own investments, and (vii) social security systems created by the Federal Government, States, and Municipalities. **Hong Kong:** Distributed by UBS Securities Asia Limited and/or UBS AG, Hong Kong Branch. **Singapore:** Distributed by UBS Securities Pte. Ltd. [MCI (P) 016/09/2014 and Co. Reg. No.: 198500648C] or UBS AG, Singapore Branch. Please contact UBS Securities Pte. Ltd., an exempt financial adviser under the Singapore Financial Advisers Act (Cap. 110); or UBS AG, Singapore Branch, an exempt financial adviser under the Singapore Financial Advisers Act (Cap. 110) and a wholesale bank licensed under the Singapore Banking Act (Cap. 19) regulated by the Monetary Authority of Singapore, in respect of any matters arising from, or in connection with, the analysis or document. The recipients of this document represent and warrant that they are accredited and institutional investors as defined in the Securities and Futures Act (Cap. 289). **Japan:** Distributed by UBS Securities Japan Co., Ltd. to professional investors (except as otherwise permitted). Where this document has been prepared by UBS Securities Japan Co., Ltd., UBS Securities Japan Co., Ltd. is the author, publisher and distributor of the document. Distributed by UBS AG, Tokyo Branch to Professional Investors (except as otherwise permitted) in relation to foreign exchange and other banking businesses when relevant. **Australia:** Clients of UBS AG: Distributed by UBS AG (Holder of Australian Financial Services License No. 231087). Clients of UBS Securities Australia Ltd: Distributed by UBS Securities Australia Ltd (Holder of Australian Financial Services License No. 231098). Clients of UBS Wealth Management Australia Ltd: Distributed by UBS Wealth Management Australia Ltd (Holder of Australian Financial Services License No. 231127). This Document contains general information and/or general advice only and does not constitute personal financial product advice. As such, the information in this document has been prepared without taking into account any investor's objectives, financial situation or needs, and investors should, before acting on the information, consider the appropriateness of the information, having regard to their objectives, financial situation and needs. If the information contained in this document relates to the acquisition, or potential acquisition of a particular financial product by a 'Retail' client as defined by section 761G of the Corporations Act 2001 where a Product Disclosure Statement would be required, the retail client should obtain and consider the Product Disclosure Statement relating to the product before making any decision about whether to acquire the product. The UBS Securities Australia Limited Financial Services Guide is available at: www.ubs.com/ecs-research-fsg. **New Zealand:** Distributed by UBS New Zealand Ltd. The information and recommendations in this publication are provided for general information purposes only. To the extent that any such information or recommendations constitute financial advice, they do not take into account any person's particular financial situation or goals. We recommend that recipients seek advice specific to their circumstances from their financial advisor. **Korea:** Distributed in Korea by UBS Securities Pte. Ltd., Seoul Branch. This document may have been edited or contributed to from time to time by affiliates of UBS Securities Pte. Ltd., Seoul Branch. **Malaysia:** This material is authorized to be distributed in Malaysia by UBS Securities Malaysia Sdn. Bhd (Capital Markets Services License No.: CMSL/A0063/2007). This material is intended for professional/institutional clients only and not for distribution to any retail clients. **India:** Prepared by UBS Securities India Private Ltd. (Corporate Identity Number U67120MH1996PTC097299) 2/F, 2 North Avenue, Maker Maxity, Bandra Kurla Complex, Bandra (East), Mumbai (India) 400051. Phone: +912261556000. It provides brokerage services bearing SEBI Registration Numbers: NSE (Capital Market Segment): INB230951431, NSE (F&O Segment) INF230951431, NSE (Currency Derivatives Segment) INE230951431, BSE (Capital Market Segment) INB010951437; merchant banking services bearing SEBI Registration Number: INM000010809 and research services. UBS AG, its affiliates or subsidiaries may have debt holdings or positions in the subject Indian company/companies. Within the past 12 months, UBS AG, its affiliates or subsidiaries may have received compensation for non-investment banking securities-related services and/or non-securities services from the subject Indian company/companies. With regard to information on associates, please refer Annual Report at: http://www.ubs.com/global/en/about_ubs/investor_relations/annualreporting.html

The disclosures contained in research documents produced by UBS Limited shall be governed by and construed in accordance with English law.

UBS specifically prohibits the redistribution of this document in whole or in part without the written permission of UBS and UBS accepts no liability whatsoever for the actions of third parties in this respect. Images may depict objects or elements that are protected by third party copyright, trademarks and other intellectual property rights. © UBS 2015. The key symbol and UBS are among the registered and unregistered trademarks of UBS. All rights reserved.

