US Utilities & Clean Tech

Addressing the elephant in the room: Have rates killed the renewables return?

Industry Overview

Is NEE really the "canary" for the renewables sector?

Just over a week ago, news of a cut to the growth outlook at NextEra Energy Partners (NEP) caused widespread ripple effects to its parent (NextEra) and the broader utility & cleantech complex. Rates have indeed moved higher through the same period and utilities and renewables are rates sensitive, but the collapse in confidence in NextEra - the world's largest renewable developer - has precipitated a draconian view for the outlook of renewables as an asset class, and the associated returns. Alongside NEE's 23% collapse since 09/26, the XLU utility ETF and TAN Solar ETF are down 8% as compared with the SPX flat and the NDX up 1.6% in the same time period. For our latest thoughts on NextEra and its specific challenges see NextEra Energy: End of an Era? Time (and Rates) Will Tell – Reiterate Neutral and Cut PO 04 October 2023.

Are renewables returns still viable? Yes.

Are renewables returns no longer viable in a high rates environment? We have answered various permutations of this question in recent days, and we have maintained that the answer is still "yes". We reiterate that issues inferred about the quality of NextEra's renewables returns are in the context of a dropdown structure that has had clear issues for months. We further emphasize that this structure is not the norm for the broad slate of independents developing, financing, and owning renewable assets across the U.S. nor is it the norm for most utility owners. Indeed, renewables are rates sensitive but a near doubling in PPA prices from 2021 to today shows that the cost of capital pain has been universal. Rates pressures have been and will likely continue to be passed through.

"Then" and "now" returns. Pricing has tracked with rates

In our recent report about the sudden unraveling of the space (see our: Rates, rates, & yes, more rates. Utility and clean energy weakness tied to single factor) we provided an analysis to benchmark how equity needs have evolved in renewables project structures alongside the upward move in rates. In an effort to more deeply explain the return profile at each level of the capital structure we have expanded this analysis. We also extrapolate a scenario under 2021 conditions (low rates, low capex) to a today (much higher rates, still elevated capex). The paradox of investors ire towards renewable returns today is that the increase in cost of capital has helped clean up some of the more aggressive practices of utility scale developers - thin operating margins, merchant cash flow dependence, long dated returns etc. While rates have caused prices to increase, we contend this has inherently fortified unit economics and limited a pure sensitivity to cost of capital over the longer term.

What to Buy on collateral damage: FSLR, ARRY, NXT, ED

We continue to see significant utility scale growth in renewables in the coming years, and do not agree with the collateral damage we saw in the space in the last week; we see particularly attractive buying opportunities. We are preliminarily bias towards utility scale solar equipment suppliers who we expect will benefit from growth in 2024 – our preference is for FSLR, ARRY and NXT in that order. We continue to see a compelling wind recovery beyond and maintain our Buy on TPIC. Within utilities, we see Buy rated ED as the defensive choice to weather the storm given positive 2024 resets and a uniquely clean balance sheet.

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Equity
United States
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PTC – Production Tax Credit

ITC – Investment Tax Credit

PPA – Power Purchase Agreement

MW / MWhr – Megawatt / Megawatt-hour

AC – Alternating Current

DC – Direct Current

DSCR – Debt Service Coverage Ratio

Renewable returns – do they still work?

Investors are extrapolating challenges at NextEra (NEE) and NextEra Partners (NEP) to issues with broader renewables returns. We reiterate that while yes, cost of capital is higher than it was before and that yes this affects the hurdle rate for project returns, the renewable development model has and will continue to react to many of these pressures. With regard to NEE and NEP we emphasize that challenges hinge more broadly to a GP / LP (general partner / limited partner) structure and ultimately a discrepancy between the price at which assets can be dropped down against the LP cost of capital. Convertible equity financing structures (CEPF) that have in effect artificially lowered the cost of capital to the child (NEP) and incentive distribution rights (IDR) that have enhanced returns to the parent (NEE) exacerbate the inherent challenges of this structure in a higher rates environment. In plain terms while the model was significantly advantaged in a backdrop of low rates, strong equity ownership and uncompetitive risk-free yields - it is naturally disadvantaged in the inverse tape.

Back to basics – how do renewables make money.

While we attempted to address the evolution of the capital structure for renewable origination in a higher rates environment in our recent note (see our: Rates, rates, & yes, more rates. Utility and clean energy weakness tied to single factor), we believe we created more questions than answers. In an effort to more deeply explain the return profile at each level of the capital structure we have expanded that analysis to include the return at each rung of the capital structure. We also extrapolate a scenario under 2021 conditions (low rates, low capex) to today (much higher rates, still elevated capex). The paradox of investors ire towards renewable returns today is that increase in cost of capital has actually helped clean up the more aggressive practices of developers historically - thin operating margins, merchant cash flow dependence, long dated returns. But in the interest of addressing the elephant in the room, we begin by asking the core question – do renewables still work if rates are double what they used to be?

Renewables have been and will continue to be a levered asset class

At the most basic level, it is worth remembering that the output of generating assets (power) is being bid into a utility's portfolio of generating assets. Utilities have a low cost of capital and have capacity to pass their cost of capital through to consumers. Thus, if they are faced with a choice of buying power from an independent developer, the parallel question is how much would it cost them to own that power directly. If there is a natural mismatch between the cost of capital of an independent power producer and a utility, and the utility has room to rate base (i.e. bills have room to "move up"), there is an incentive for the utility to simply own the asset. If they cannot rate base the assets and there is nothing else to fill that demand, the choice is either negotiate around pricing, extend the life of existing generating fleet or possibly buy power from another project.

There are other nuances - tax "normalization" rules applied to regulated utilities have generally disadvantaged their ability to effectively monetize the tax attributes of renewables projects (the Investment / Production Tax Credit and accelerated / bonus depreciation) which has in turn advantaged the relative cost of capital of unregulated competitors. That said, the broader takeaway is that renewables were, are and will continue to be spread instruments - with rates trending higher, the logical group of asset owners might change in our view, but there are owners. In general, we expect more appetite and economic justification for utilities to own renewable assets in the future.

These assets "support" as opposed to "take on" a lot of leverage

Let's walk through the capital stack – first comes tax equity. In recent years, renewable asset owners have effectively solved for the most efficient capital structure to drive down bids for the power they generate. Unregulated parties (IPPs) have historically entered into tax equity partnerships to efficiently monetize federal subsidies. In solar there has historically been ~44 cents per dollar of capital spend in monetizable tax attributes at the project level that are otherwise worthless to most independent power producers (who don't have cash tax liability). This number is significantly higher today with the eligibility of solar to elect the Production Tax Credit (PTC) – wind historically has monetized as much as 65% of its capital stack using the PTC for context. Developers have been successful in using tax equity partnerships to monetize most of this value upfront in exchange for cash proceeds. From a developer's perspective they get to exchange ~20-30% of the project cash flows in the first five years in exchange for 35-40% of the upfront capital cost which presents a particularly attractive form of capital given it is largely enabled by non-cash attributes. Cash flow distributions after the 5-year period (after the tax credit recapture) are generally limited (~5%) and have a minimal impact on value creation. Generally, tax equity investors are bought out of their interest at this point or once a targeted yield on their investment has been met.

Followed by project level debt… The remaining cash flows after tax equity distribution are eligible collateral for project debt. The amount of project debt issued is a function of the cost of debt in the market, debt service coverage terms and the level of contracted cash. Merchant cash flows are still relatively challenging to collateralize and usually require some level of hedging – most project debt is paired with a contracted PPA's currently. Solar has the most predictability on generation and given prices are generally locked in and maintenance is largely preventative and routine, it generally gets the most generous terms on project debt as well. Debt Service Coverage ratios (DSCR) have been stable at 1.25x – wind by contrast is less predictable and has had more risks of unscheduled outage historically, DSCR's have been 1.35x or higher (recall that wind has more tax equity proceeds). Merchant / standalone storage projects are the new frontier where debt service terms can trend >2x but may come down as revenue streams are better understood by lenders.

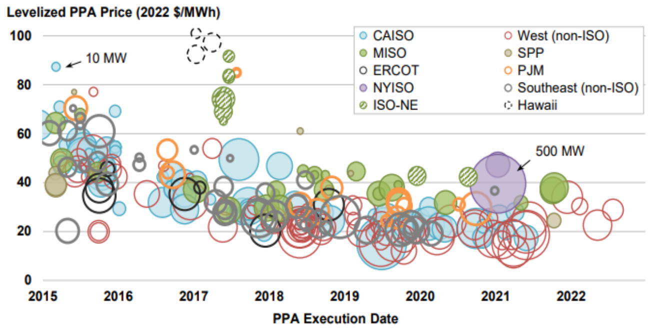
And then often a "back-levered" loan… After tax equity and project debt there is some level of equity component left over that is a minority fraction of the project (0-20% typically) – in select cases the equity required can be 0 or even negative. In recent years, asset owners have "back-levered" their required equity component with 2nd lien debt given attractive terms. In back-levering, the asset owner is collateralizing its specific equity ownership in the project as opposed to issuing capital at the holding company. We note mezzanine debt is a rough proxy for 2nd lien debt which trended in the mid-single digits (~5%) through much of 2021 and now sits >10% in our understanding. Usually as a result of cash sweep terms designed to indemnify the tax equity investor ahead of buyout, the back-levered component of the project is generally 50% of the total sponsor equity component. In levering their specific interests, an equity holder can expand their equity level return and limit upfront capital needs. This is what often drives a fully levered return from the "low teens" to the "high teens".

What about pricing, has it responded to rates pressures?

In tandem with the questions we are receiving on how this business model works investors are asking on how price has responded. As we have now covered routinely in the last two years, pricing on new PPA's has reset significantly alongside the cost of capital and clearly bottomed out on average in 2019/2020. Off of those lows, solar PPA bids are up from $25-35/MWhr in 2019 to $40-60/MWhr on a nominal basis and only slightly lower in real terms. Prices have continued to trend flat to higher in most ISO's in 2023 as the full extent of inflationary cost and higher cost of capital are priced in. Notably ERCOT pricing has continued to leg up in 2023 as record summer demand has paired with one of the most cost of capital sensitive markets given merchant exposure. We further stress that increases in insurance costs as a result of hail have uniquely affected the ERCOT market which results in an upward reset for all bids in the pool. In the below we show data aggregated by the National Renewable Energy Lab (NREL) in its latest 2023 review which incorporates inputs from PPA bidding platform LevelTen.

Exhibit 1: PPA Prices by ISO and Vintage

PPA Prices effectively bottomed in 2019/2020 with rates



Source: National Renewable Energy Laboratory

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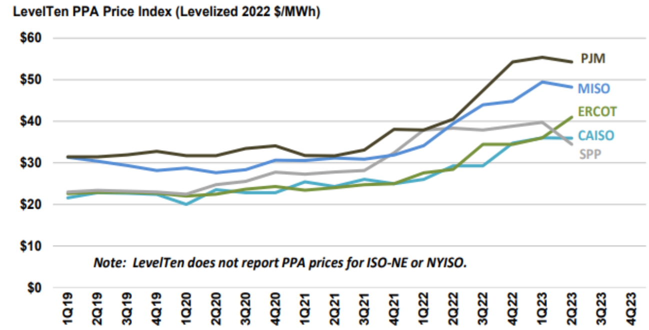
Exhibit 2: PPA Price Trend, New Bids

Pricing has nearly double across most ISO's including CAISO and ERCOT



Source: National Renewable Energy Laboratory, LevelTen

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Renewables then and now: How things used to look…

With all the above in mind we expanded our analysis into a full project model for a utility scale solar asset that better encompasses the real evolution of returns from a low rates period (2021) to today. We base capital, O&M, costs and project capacity factor (i.e. how many MWh of power are delivered vs the nameplate MW) on latest reports from NREL the first two which are generally pretty stable across regions. Notably, our 31% listed capacity factor is assumed on an AC basis inclusive of typical oversizing done to maximize operating efficiencies of the array (the DC equivalent would be ~24%). We assume ERCOT / CAISO like pricing in the mid-high $20/MWhr range for 2021 against this capacity factor which is based on the LevelTen data above and assume this realizes a 1% escalator over its contracted period (20 years) and the same in the merchant period (years 20-35). As a footnote, merchant curve assumptions are heavily debated across investors, but assets generally transact with some value attributed to third party price forecasts. As both buyers and sellers use these forecasts, debates on merchant value have not historically deterred deals getting done.

We then walk through the capital structure. At a headline level – this is not a particularly profitable project on a standalone basis. On a pure cost basis and before any subsidy, returns at the project level are low single digits with a large portion of that value in the merchant period. Incorporating tax equity (contributions and distributions) the unlevered return moves up to high single digits (~7%). With project debt in the 2-4% range at the time this was a relatively attractive hurdle rate and supported accretive use of leverage at the project level. Adding in project leverage at a 3.5% cost (~200bps over the 10 year in 2021) the return increases to 11% before back leverage. Finally, incorporating back leverage sized to 50% of the equity component the fully levered equity return trends into the mid-teens.

Exhibit 3: A solar project model in 2021

Relatively low asset level returns hinged to even lower cost of project debt. This and low cost back-levered debt drive a mid-teens equity return

$/Wdc	0.90
Asset Size (MWdc)	130
Inverter Loading Ratio	1.3x
Asset Size (MWac)	100
Capacity Factor (AC Basis)	31%
Degradation Rate	0.5%
Fair Market Value Step Up (ITC Only)	20%
Asset Valuation for ITC ($mm)	140.4
PPA Price ($/MWh)	27
Escalator	1%
O&M ($/KW-yr)	9
Inflation	3%
Debt Service Coverage Ratio	1.25

Interest Rate	3.50%	5.50%	6.50%
ITC			
Tax Credit % of Stack	36%	36%	36%
Debt % of Stack	55%	46%	42%
Equity % Required	9%	18%	22%
PTC			
Tax Credit % of Stack	45%	45%	45%
Debt % of Stack	55%	46%	42%
Equity % Required	0%	9%	13%

Year	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**20**	**35**
PTC ($/MWhr)		27	28	29	30	30	31	32	33	34	35		
Generation (GWhr)		273	272	271	269	268	267	265	264	263	261	248	230
PTC Value ($mm)		7,379	7,563	7,751	7,943	8,141	8,343	8,550	8,763	8,981	9,204		
PPA ($/MWhr)		27	27	28	28	28	28	29	29	29	30	33	38
Revenue		7,379	7,416	7,453	7,490	7,527	7,564	7,601	7,639	7,677	7,715	8,105	8,728
O&M		900	927	955	983	1,013	1,043	1,075	1,107	1,140	1,174	1,578	2,459
EBITDA		**6,479**	**6,489**	**6,498**	**6,506**	**6,514**	**6,521**	**6,527**	**6,532**	**6,537**	**6,540**	**6,527**	**6,270**
Post Tax Equity Cash Flow		4,860	4,867	4,873	4,880	4,885	4,890	6,200	6,205	6,210	6,213	6,201	5,956
DSCR		1.25x	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x
Cash Flow available for Debt Service		**3,888**	**3,893**	**3,899**	**3,904**	**3,908**	**3,912**	**4,960**	**4,964**	**4,968**	**4,971**	**4,961**	**4,765**
Interest		2,273	2,216	2,157	2,096	2,033	1,968	1,900	1,792	1,681	1,566	168	
Principal		1,615	1,677	1,741	1,807	1,875	1,945	3,061	3,172	3,286	3,404	4,793	
Debt Balance	**64,933**	**63,318**	**61,640**	**59,899**	**58,092**	**56,217**	**54,272**	**51,211**	**48,039**	**44,753**	**41,349**	**(0)**	**(0)**
Project Cash Flow	(117,000)	6,479	6,489	6,498	6,506	6,514	6,521	6,527	6,532	6,537	6,540	6,527	6,270
IRR	4%												
IRR Contracted	***1%***												
Unlevered Cash Flow	(74,880)	4,860	4,867	4,873	4,880	4,885	4,890	6,200	6,205	6,210	6,213	6,201	5,956
IRR	7%												
Levered Cash Flow	(9,947)	972	973	975	976	977	978	1,240	1,241	1,242	1,243	1,240	1,191
IRR	11%												
Back-Levered Debt Payments (Mortgage Model) @	5%	399	399	399	399	399	399	399	399	399	399		
Back-Levered Cash Flow Against Equity	(4,974)	573	574	576	577	578	579	841	842	843	844	1,240	1,191
IRR	14%												

Source: BofA Global Research, using various inputs from the National Renewable Energy Laboratory and LevelTen Pricing Trends

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How they look today…

We take the same project shown above and directionally reset economics for today. Our capital cost is assumed $1.1/Wdc vs $0.9/Wdc previously which is in line with relatively consisted inflationary pressures we have tracked in the space (XEL for instance estimated their 5GW+ procurement saw wind & solar +20-30% from last several years). More than half of this is the cost increase reflects solar modules which have been quoted between 35-45c/W for 2024 delivery vs 25-30c/W in 2021. Labor and engineering make up the bulk of the remainder. We show both a PTC and ITC capital structure albeit we note that with the cost increase, this theoretical project does not benefit from PTC election – as module costs come down the relative incentive should increase quickly.

We assume pricing has rebased to $40/MWhr which is again what we see in the LevelTen tracking of bids and find that under the same debt service terms and a cost of debt that that is 300bps higher (again ~200bps over 10 year), the capital structure is actually roughly equivalent to what it was previously. With 50-55% project debt and a 10% equity component. We further note that this project is incrementally more competitive than prior without leverage with a 6% project level return and 9% after tax equity. Incorporating the 6.5% debt at the project level and 10.5% assumed cost of 2[nd] lien debt which we base on broader indices for mezzanine yields the return profile is broadly in-tact.

Exhibit 4: The same solar project model in 2023

Stronger standalone returns enabled by higher pricing. This means more EBITDA per MW to generate the same NPV on a levered basis. Returns are less dependent on cost of debt and include higher hurdle rates and lower merchant dependence

$/Wdc	1.1
Asset Size (MWdc)	130
Inverter Loading Ratio	1.3
Asset Size (MWac)	100

Interest Rate	6.5%	7.5%	9.5%

Exhibit 4: The same solar project model in 2023

Stronger standalone returns enabled by higher pricing. This means more EBITDA per MW to generate the same NPV on a levered basis. Returns are less dependent on cost of debt and include higher hurdle rates and lower merchant dependence

Capacity Factor (AC Basis)	31%
Degradation Rate	0.5%
Fair Market Value Step Up (ITC Only)	20%
Asset Valuation for ITC ($mm)	171.6
PPA Price ($/MWh)	40
Escalator	1%
O&M ($/KW-yr)	9
Inflation	3%
Debt Service Coverage Ratio	1.25

ITC			
Tax Credit % of Stack	36%	36%	36%
Debt % of Stack	54%	50%	46%
Equity % Required	10%	14%	18%
PTC			
Tax Credit % of Stack	36%	36%	36%
Debt % of Stack	54%	50%	46%
Equity % Required	9%	14%	17%

Year	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**20**	**35**
PTC ($/MWhr)		27	28	29	30	30	31	32	33	34	35		
Generation (GWhr)		273	272	271	269	268	267	265	264	263	261	248	230
PTC Value ($mm)		7,379	7,563	7,751	7,943	8,141	8,343	8,550	8,763	8,981	9,204		
PPA ($/MWhr)		40	40	41	41	42	42	42	43	43	44	48	56
Revenue		10,932	10,987	11,041	11,096	11,151	11,206	11,261	11,317	11,373	11,429	12,008	12,931
O&M		900	927	955	983	1,013	1,043	1,075	1,107	1,140	1,174	1,578	2,459
EBITDA		**10,032**	**10,060**	**10,086**	**10,112**	**10,138**	**10,162**	**10,187**	**10,210**	**10,233**	**10,255**	**10,430**	**10,472**
Post Tax Equity Cash Flow		7,524	7,545	7,565	7,584	7,603	7,622	9,677	9,700	9,721	9,742	9,908	9,949
DSCR		1.25x	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x	1.25x
Cash Flow available for Debt Service		**6,019**	**6,036**	**6,052**	**6,067**	**6,083**	**6,097**	**7,742**	**7,760**	**7,777**	**7,794**	**7,927**	**7,959**
Interest		5,049	4,986	4,918	4,844	4,764	4,679	4,586	4,381	4,162	3,927	484	
Principal		971	1,050	1,134	1,223	1,318	1,419	3,155	3,378	3,615	3,867	7,443	
Debt Balance	**77,676**	**76,706**	**75,656**	**74,522**	**73,298**	**71,980**	**70,561**	**67,406**	**64,028**	**60,412**	**56,546**	**-**	**-**
Project Cash Flow	(143,000)	10,032	10,060	10,086	10,112	10,138	10,162	10,187	10,210	10,233	10,255	10,430	10,472
IRR	6%												
IRR Contracted	**4%**												
Unlevered Cash Flow	(91,520)	7,524	7,545	7,565	7,584	7,603	7,622	9,677	9,700	9,721	9,742	9,908	9,949
IRR	9%												
Levered Cash Flow	(13,844)	1,505	1,509	1,513	1,517	1,521	1,524	1,935	1,940	1,944	1,948	1,982	1,990
IRR	12%												
Back-Levered Debt Payments (Mortgage Model)	10.5%	841	841	841	841	841	841	841	841	841	841		
Back-Levered Cash Flow Against Equity	(6,922)	664	668	672	676	680	683	1,094	1,099	1,103	1,107	1,982	1,990
IRR	13%												

Source: BofA Global Research, using various inputs from the National Renewable Energy Laboratory and LevelTen Pricing Trends

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The 4 Key takeaways from the above

1. Renewable projects have and will continue to be levered assets. Independent builders are inherently competing with utilities to own these assets and their long life potential. If cost of capital no longer justifies returns to an independent producer, utilities can choose to own the assets directly.

2. There is a lot of leverage in the model because (1) it is a competitive space with well capitalized names and (2) it supports a lot of leverage. Project debt is collateralized by cash flows at the project level while back levered loans are collateralized by an equity stake in the project. Tax equity terms ultimately dictate the amount of subordinated leverage (if any) and the amount of any all debt in the project is sized with an ample "cushion". Cost of capital has moved up, but it has done so for everyone that are all generally following the same model and thus the output has been higher pricing.

3. Pricing resets have moved in lockstep with higher costs and higher rates. PPA bids have more than doubled in some cases in roughly equivalent moves to financing costs. The good news is that this inherently makes projects more competitive at the asset level with higher contracted returns and less dependence on merchant cash flows. For those using a multiple valuation, note that more EBITDA per MW of generation is needed to generate the same level of levered NPV.

4. Forecasted cost deflation in solar modules can materially improve project returns and simultaneously incentivize a shift toward solar PTC's. Solar PTC's can deliver incrementally more tax equity proceeds vs an ITC at an advantaged cost of capital. This deflation further buffers any relative equity needs in the sector as well as a specific reliance on interest rates. Operating cost deflation can further significantly improve equity level cash flows. Watch this for NextEra as a means to drive organic EPS against roll off of interest rate swaps.

5. **Bonus 'takeaway':** Returns in the sector are *not* dependent on some independent cost of capital from a yield vehicle like NEP. Investors who are focused on this potential risk that access to 'competitive' capital from NEP are missing the broader point about the level of robustness still in the market prior to selling down. We perceive most investors still see returns as intact but there is a non-trivial portion of investor selling pressure tied to conflating NEP issues to a wider issue on returns. We see the issues are principally tied to legacy projects as best we can tell. Without specific affirmation, it's hard to tell.

Stocks mentioned

BofA Ticker	Bloomberg ticker	Company name	Price	Rating
ARRY	ARRY US	Array Technologies	US$ 20.33	C-1-9
ED	ED US	Consolidated Edison	US$ 84.2	A-1-7
FSLR	FSLR US	First Solar	US$ 151.82	C-1-9
NXT	NXT US	Nextracker	US$ 35.67	C-1-9
TPIC	TPIC US	TPI Composites	US$ 2.46	C-1-9

Source: BofA Global Research

Price objective basis & risk

Array Technologies (ARRY)

Our $30/share PO is based on a 50/50 weighted discounted cash flow (DCF) and EV/EBITDA multiple methodology. Our DCF valuation is $21.50/share, and our EV/EBITDA valuation is $39/share based on the average of comps at 13x/10x 2024E / 2025E EBITDA. We use an average given ongoing uncertainties in the utility scale solar market which we expect to be reflected in valuation alongside a more normalized business outlook in 2024.

DCF approach:
- We derive FCFF and net off stock-based compensation and contribution to margins from Inflation Reduction Act Credits which are valued separately
- FCFF discounted a 12% cost of capital given risk associated with the execution of the growth strategy but noting ARRY is financed with lower cost debt
- Terminal multiple of 12.0x akin to where ARRY has traded on an average 2 year forward basis.
- We add in the discounted value of tax credit upside also at 12% through full phase down in 2023

Upside risks to our PO are (1) a stronger-than-anticipated outlook for solar projects in the US, (2) higher cost deflation on key inputs, including steel and freight, and accretion to margins (3) policy clarity in the US, which would give more long-term certainty for ARRY's buyers

Downside risks to our PO are (1) a slower recovery in US solar projects, (2) lack of execution on margin advancement and cost-cutting initiatives, and (3) an increasingly inflationary backdrop on supply chain

Consolidated Edison (ED)

Our $96 PO is based on a sum-of-the-parts analysis applying premiums and discounts to the regulated group multiples 14.8x/14.3x for electric/gas respectively with an in-line multiple for Electric, Steam, & Gas to reflect a combination of historically challenging regulation but above-peer growth and de-risked profile. We apply a 2x premium to electric and 1x premium to gas to reflect regulatory de-risk and growth prospects. Both electric and gas peer 2025 P/E multiples are grossed up by 5% to reflect capital appreciation across the sector.

For noncore segments we apply an in line valuation to Con Edison Electric Transmission (CET) given potential for earnings growth and attractive regulatory characteristics. For the Mountain Valley Pipeline stake we apply a 10x EBITDA multiple to our 2024 EPS estimate reflecting recent positive legal and legislative developments.

Upside/downside risks are 1) earned regulatory returns, 2) capital expenditures, 3) regulatory/political/legislative changes, 4) interest rates, 5) natural disasters, 6) execution on unregulated projects. Additional downside risk: lack of approval or modification of the JP by the New York state commission.

First Solar, Inc. (FSLR)

Our price objective is $283/share, based on an EV/EBITDA method. We use 9x our 2026E EBITDA, in-line with US Industrial comp group/module peers. Given FSLR's contracted margins through 2027+, we now see US Industrials as the best comp group. We conservatively apply -20% multiple versus industrials given FSLR high free-cash-flow reinvestment need, despite IRA which supports near-term competitive positioning. We also add net cash balance and $80/share net present value to account for production tax credits stipulated in Inflation Reduction Act.

Downside risks: 1) worse/declining price environment, 2) declining margins or worse-than-expected cost structure, 3) unfavorable trade policy dynamics, 5) worse Chinese/global demand environment, 6) worse execution on systems business, and 7) technology fails to live up to expectations 8) FSLR capture of production tax credits fall short of expectations

Nextracker Inc (NXT)
Our $45/share PO is based on a 50/50 weighted discounted cash flow (DCF) and EV/EBITDA multiple methodology. Our DCF valuation is $380/share, and our EV/EBITDA valuation is $51/share based on a 3x premium over the average of tracker comps at 11.5x / 9.5x CY24E / CY25E EBITDA . We use an average given uncertainty about the ramp in utility scale solar which may normalize more fully in 2025.

DCF approach:
- We derive FCFF and net off stock-based compensation and contribution to margins from Inflation Reduction Act Credits which are valued separately
- FCFF discounted a 11% cost of capital given risk associated with the execution of the growth strategy but noting NXT holds a clean balance sheet.
- Terminal multiple of 13.0x akin to where NXT's leading public peer has traded on an average 2 year forward basis.

Upside risks to our PO are (1) a stronger-than-anticipated outlook for solar projects in the US, (2) higher cost deflation on key inputs, including steel and freight, and accretion to margins (3) policy clarity in the US, which would give more long-term certainty for ARRY's buyers

Downside risks to our PO are (1) a slower recovery in US solar projects, (2) lack of execution on margin advancement and cost-cutting initiatives, and (3) an increasingly inflationary backdrop on supply chain

TPI Composites (TPIC)
Our $12/sh PO is based on a 50/50 weighted Discounted Cash Flow (DCF) and EV/EBITDA multiple methodology. Our DCF valuation is $11.25/sh and our EV/EBITDA valuation is $13/sh based on 2024E / 2025E.

DCF approach:
- We derive FCFE by removing the contribution from stock-based compensation to FCF from 2023 through 2030
- FCFE discounted by 18% cost of equity
- We apply a terminal multiple of 8.0x (compared to 10.0x for solar semiconductor stocks, given less technical differentiation in TPIC's 'built-to-spec' model and lower growth rate forecast compared to solar)

EV/EBITDA approach:
- We value TPIC on an average of '24 / '25 EV/EBITDA multiple of 7x / 7x, which is a -1x discount to peer averages

Upside risks: (1) Budget reconciliation and direct pay provisions significantly boosting the wind installation outlook, (2) TPIC tapping into the wind repowering market in a meaningful way, (3) inflation cycle in resin and other raw materials reversing sooner than expected,(4) transportation business growth via major customer announcements.

Downside risks: (1) Rising interconnection costs and tax-equity scarcity dampening the wind installation outlook further, (2) customers insourcing greater percentage of volume in light of declining demand, (3) TPIC customers ceding market share to the Chinese original equipment manufacturers (OEMs).

Analyst Certification

I, Julien Dumoulin-Smith, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

North America - Utilities and Alt Energy Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Alliant Energy Corporation	LNT	LNT US	Julien Dumoulin-Smith
	Ameren Corporation	AEE	AEE US	Julien Dumoulin-Smith
	Ameresco	AMRC	AMRC US	Julien Dumoulin-Smith
	Array Technologies	ARRY	ARRY US	Julien Dumoulin-Smith
	Atlantica Sustainable Infrastructure	AY	AY US	Julien Dumoulin-Smith
	Atmos Energy Corporation	ATO	ATO US	Julien Dumoulin-Smith
	Bloom Energy	BE	BE US	Julien Dumoulin-Smith
	CenterPoint Energy	CNP	CNP US	Julien Dumoulin-Smith
	ChargePoint Holdings	CHPT	CHPT US	Alex Vrabel
	Cheniere Energy Inc	LNG	LNG US	Julien Dumoulin-Smith
	CMS Energy	CMS	CMS US	Julien Dumoulin-Smith
	Consolidated Edison	ED	ED US	Julien Dumoulin-Smith
	DTE Energy	DTE	DTE US	Julien Dumoulin-Smith
	Duke Energy	DUK	DUK US	Julien Dumoulin-Smith
	Enlight Renewable Energy Ltd	ENLT	ENLT US	Julien Dumoulin-Smith
	Enlight Renewable Energy Ltd	XENLF	ENLT IT	Julien Dumoulin-Smith
	Exelon	EXC	EXC US	Paul Zimbardo
	First Solar, Inc.	FSLR	FSLR US	Julien Dumoulin-Smith
	FREYR Battery	FREY	FREY US	Julien Dumoulin-Smith
	FTC Solar	FTCI	FTCI US	Julien Dumoulin-Smith
	Hannon Armstrong	HASI	HASI US	Julien Dumoulin-Smith
	Hydro One	YH	H CN	Dariusz Lozny, CFA
	Maxeon Solar Technologies	MAXN	MAXN US	Julien Dumoulin-Smith
	MDU Resources Group, Inc.	MDU	MDU US	Dariusz Lozny, CFA
	Nextracker Inc	NXT	NXT US	Julien Dumoulin-Smith
	NiSource Inc	NI	NI US	Julien Dumoulin-Smith
	NorthWestern Corporation	NWE	NWE US	Julien Dumoulin-Smith
	NRG Energy	NRG	NRG US	Julien Dumoulin-Smith
	PG&E Corporation	PCG	PCG US	Julien Dumoulin-Smith
	PNM Resources Inc.	PNM	PNM US	Julien Dumoulin-Smith
	Portland General Electric Company	POR	POR US	Julien Dumoulin-Smith
	PPL Corporation	PPL	PPL US	Paul Zimbardo
	Public Service Enterprise Group	PEG	PEG US	Julien Dumoulin-Smith
	ReNew Power	RNW	RNW US	Julien Dumoulin-Smith
	Sempra Energy	SRE	SRE US	Julien Dumoulin-Smith
	Sunnova Energy	NOVA	NOVA US	Julien Dumoulin-Smith
	SunRun	RUN	RUN US	Julien Dumoulin-Smith
	TPI Composites	TPIC	TPIC US	Julien Dumoulin-Smith
	Vistra Energy	VST	VST US	Julien Dumoulin-Smith
	WEC Energy Group Inc	WEC	WEC US	Julien Dumoulin-Smith
NEUTRAL				
	AES	AES	AES US	Julien Dumoulin-Smith
	Algonquin Power & Utilities Corp	AQN	AQN US	Dariusz Lozny, CFA
	Algonquin Power & Utilities Corp	YAQN	AQN CN	Dariusz Lozny, CFA
	AltaGas	YALA	ALA CN	Dariusz Lozny, CFA
	American Electric Power	AEP	AEP US	Julien Dumoulin-Smith
	Clearway Energy	CWENA	CWEN/A US	Julien Dumoulin-Smith
	Clearway Energy	CWEN	CWEN US	Julien Dumoulin-Smith
	Constellation Energy Corp	CEG	CEG US	Paul Zimbardo
	Emera Inc	YEMA	EMA CN	Dariusz Lozny, CFA
	Entergy	ETR	ETR US	Paul Zimbardo
	Essential Utilities	WTRG	WTRG US	Julien Dumoulin-Smith
	Evergy, Inc	EVRG	EVRG US	Julien Dumoulin-Smith
	Fluence Energy	FLNC	FLNC US	Julien Dumoulin-Smith
	Idacorp	IDA	IDA US	Paul Zimbardo
	New Fortress Energy	NFE	NFE US	Cameron Lochridge
	NextEra Energy	NEE	NEE US	Julien Dumoulin-Smith
	NextEra Energy Partners	NEP	NEP US	Julien Dumoulin-Smith
	Northwest Natural Holdings	NWN	NWN US	Julien Dumoulin-Smith
	OGE Energy Corp	OGE	OGE US	Julien Dumoulin-Smith
	ONE Gas, Inc.	OGS	OGS US	Julien Dumoulin-Smith
	Ormat Technologies	ORA	ORA US	Julien Dumoulin-Smith
	Pinnacle West	PNW	PNW US	Julien Dumoulin-Smith

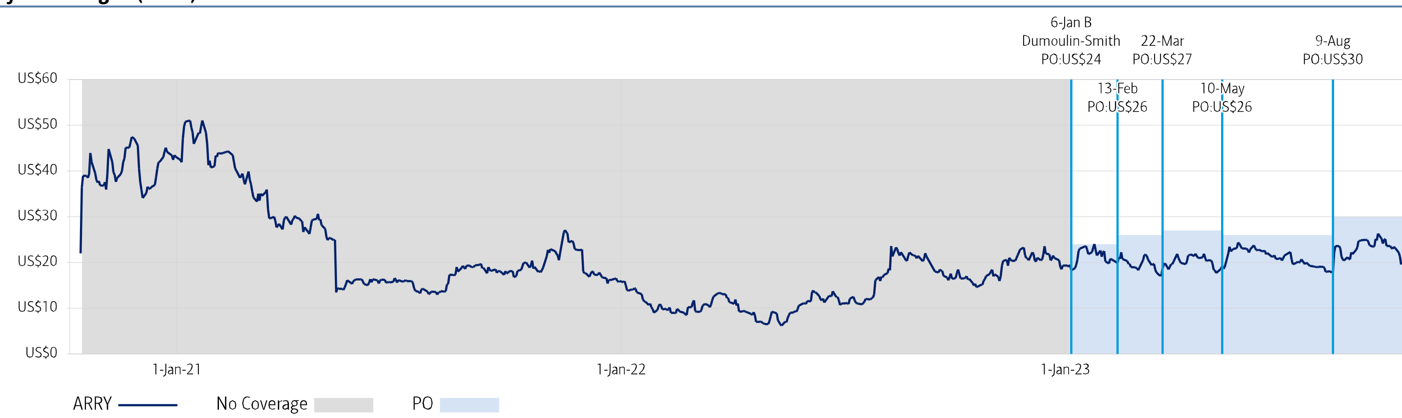
North America - Utilities and Alt Energy Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	SolarEdge Technologies	SEDG	SEDG US	Julien Dumoulin-Smith
	Southern Company	SO	SO US	Julien Dumoulin-Smith
	Southwest Gas Holdings	SWX	SWX US	Julien Dumoulin-Smith
	TransAlta Corp	TAC	TAC US	Dariusz Lozny, CFA
	TransAlta Corporation	YTA	TA CN	Dariusz Lozny, CFA
	Xcel Energy Inc	XEL	XEL US	Julien Dumoulin-Smith
UNDERPERFORM				
	Allete Inc	ALE	ALE US	Julien Dumoulin-Smith
	American Water Works	AWK	AWK US	Julien Dumoulin-Smith
	Avangrid	AGR	AGR US	Paul Zimbardo
	Avista	AVA	AVA US	Julien Dumoulin-Smith
	Black Hills Corporation	BKH	BKH US	Julien Dumoulin-Smith
	Dominion Energy	D	D US	Paul Zimbardo
	Edison International	EIX	EIX US	Paul Zimbardo
	Enphase Energy	ENPH	ENPH US	Julien Dumoulin-Smith
	Eversource Energy	ES	ES US	Paul Zimbardo
	FirstEnergy	FE	FE US	Julien Dumoulin-Smith
	Fortis	YFTS	FTS CN	Dariusz Lozny, CFA
	Fortis Inc	FTS	FTS US	Dariusz Lozny, CFA
	Generac Holdings Inc.	GNRC	GNRC US	Julien Dumoulin-Smith
	Hawaiian Electric Industries	HE	HE US	Julien Dumoulin-Smith
	MGE Energy	MGEE	MGEE US	Julien Dumoulin-Smith
	New Jersey Resources Corp	NJR	NJR US	Julien Dumoulin-Smith
	Spire	SR	SR US	Julien Dumoulin-Smith
	Stem, Inc.	STEM	STEM US	Julien Dumoulin-Smith
	SunPower Corp.	SPWR	SPWR US	Julien Dumoulin-Smith
	Tellurian Inc	TELL	TELL US	Julien Dumoulin-Smith
	UGI Corp.	UGI	UGI US	Julien Dumoulin-Smith

Disclosures

Important Disclosures

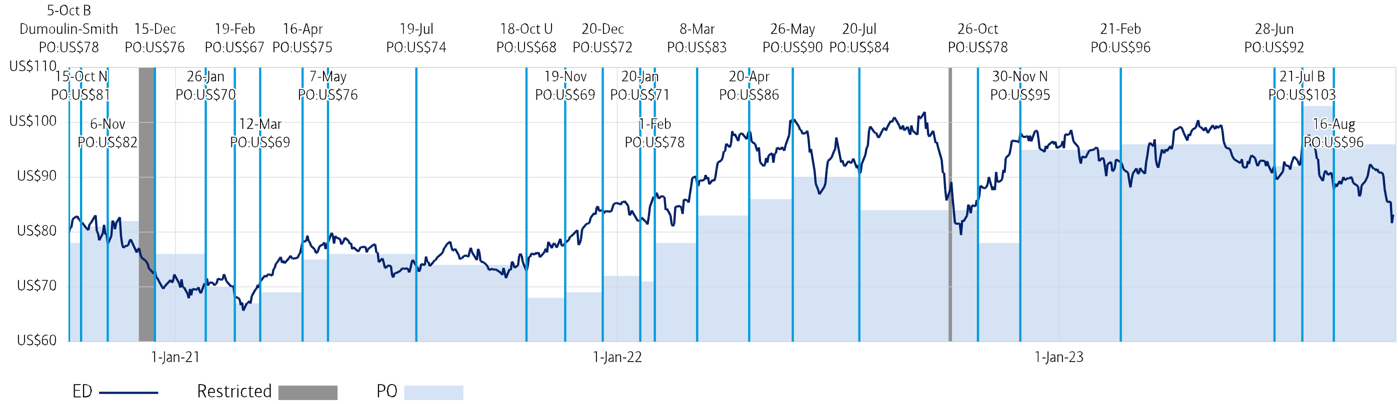
Array Technologies (ARRY) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Consolidated Edison (ED) Price Chart



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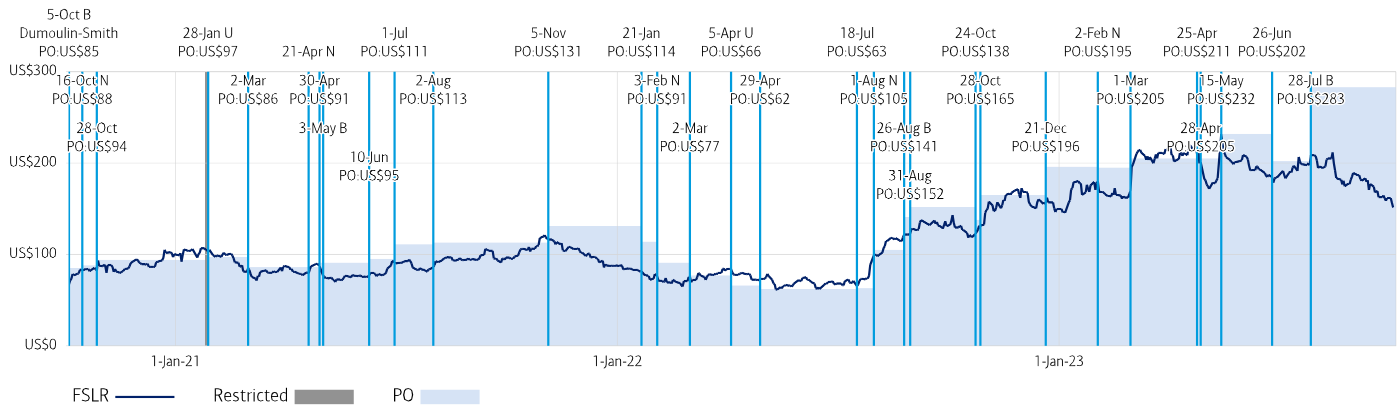
First Solar (FSLR) Price Chart



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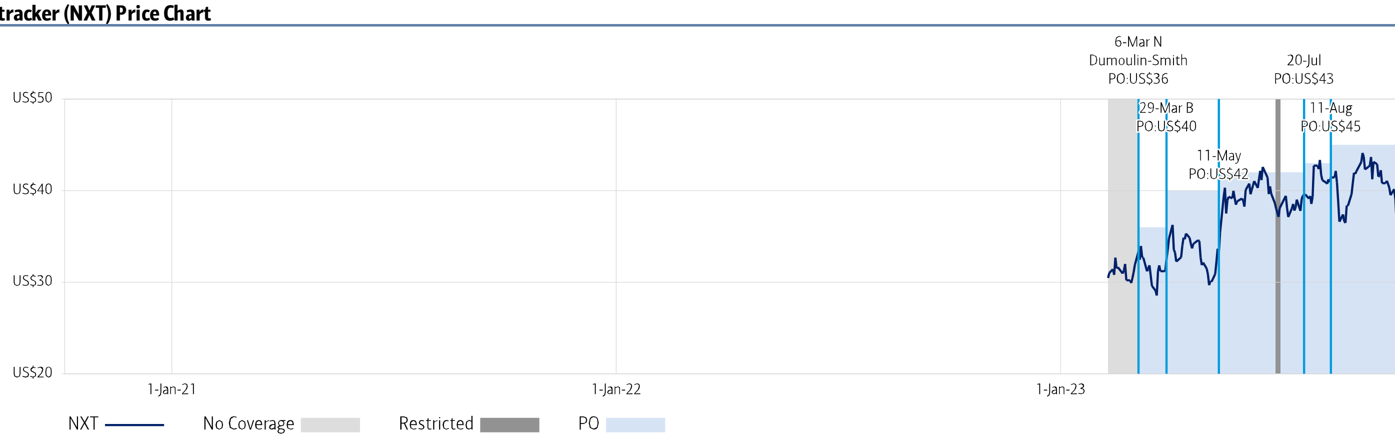
Nextracker (NXT) Price Chart



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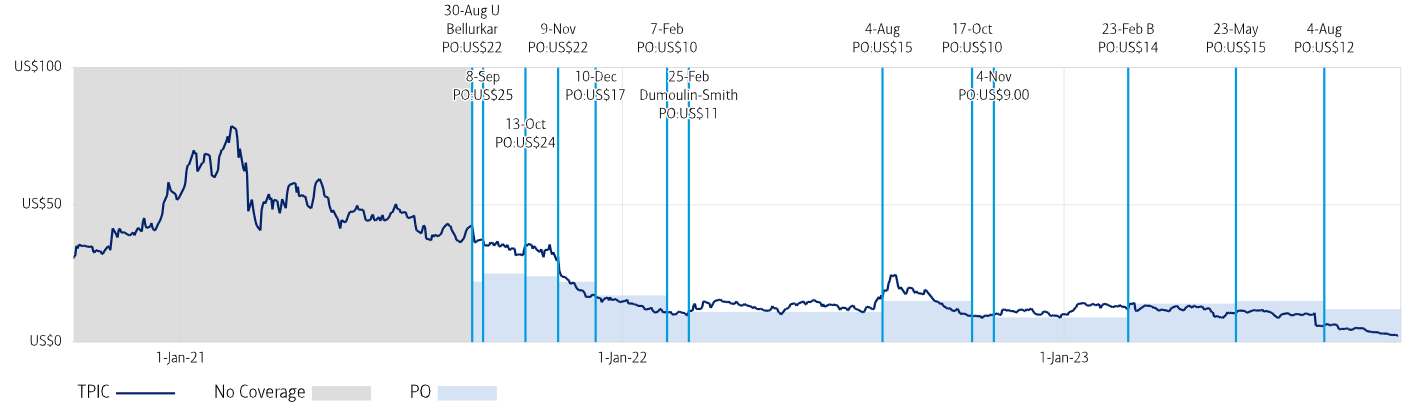
TPI Composites (TPIC) Price Chart



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Equity Investment Rating Distribution: Alternative Energy Group (as of 30 Sep 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships R1	Count	Percent
Buy	12	70.59%	Buy	10	83.33%
Hold	3	17.65%	Hold	2	66.67%
Sell	2	11.76%	Sell	1	50.00%

Equity Investment Rating Distribution: Utilities Group (as of 30 Sep 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships R1	Count	Percent
Buy	80	51.28%	Buy	51	63.75%
Hold	42	26.92%	Hold	32	76.19%
Sell	34	21.79%	Sell	22	64.71%

Equity Investment Rating Distribution: Global Group (as of 30 Sep 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships R1	Count	Percent
Buy	1869	53.48%	Buy	1046	55.97%
Hold	828	23.69%	Hold	461	55.68%
Sell	798	22.83%	Sell	370	46.37%

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster R2
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

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