US Alternative Energy

# The private-public divide: The bigs to get bigger as resi financing hits road blocks

Industry Overview

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Equity
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CPR – Conditional Prepayment Rate

PPA – Power Purchase Agreement

ABS – Asset Backed Security

YTM – Yield to Maturity

## There are now three distinct challenges in resi financing

In just the most recent weeks of 2023 there are now three distinct headwinds emerging in resi solar financing. The trajectory for the next leg up (or down) on (1) cost of capital is the obvious one which is ultimately felt by all providers and reflected in both pricing and YTM's across the space with senior debt that hovers in the 5.5-7% range. We note Mosaic, who is now in the market for a forthcoming ABS will give the latest "real time" data point in the next week. The two less obvious headwinds are the unique factors underlying competitive trends between lenders; these are (2) the relative historic dependence of private capital returns on mortgage refinancing (which has collapsed) and the (3) lending appetite of that capital which is now a real question. On the latter, while investors tend to focus on the ABS market as a proxy for broader trends, the ~$4bn in 2022 issuances show this is a minority fraction of the pie. The majority of the resi financing market actually occurs via a laundry list of Fin-Techs backstopped by syndicated capital and forward flow agreements with credit unions, regional banks, and large asset managers. In the heydays of cheap capital, this low friction model was the clear winner, embodied by a series of acquisitions in 2021 (Dividend / Fifth Third, GS / GreenSky) to internalize these platform services. But less than two years later and ahead of the recent banking turmoil, that same model is running into challenges, exemplified by SUNL's (not covered) issues with partner Cross River Bank but also in Goldman's acquired GreenSky unit which is now, according to the media up for sale after credit loss provisions increased in 2022. While its ultimately unclear what exactly comes next in, we find it hard to believe that multi-asset lenders are looking to extend themselves further in this backdrop which in turn exacerbates still extant questions on resi market growth in 2023.

## Prepayments will affect the private capital more

We have already highlighted the relative importance of prepayments in our recent ABS report: (see note) but our deeper assessment shows that this is really a risk that focuses on the private market more-so. We emphasize that further discussions and our own review of the available data suggests significant roll up mortgage refinancing as a key driver of outsized prepayment performance for Goodleap and Mosaic in 2020 and 2021. NOVA has actually lagged peers substantively in this regard given it lacks this capacity. But paradoxically, as we have seen the whole group prepayment trend devolve into a 3-6% range, this equates to a move of a few hundred basis points for NOVA vs in some cases 10%+ for peers; the latter we estimate translates to 400bps drop in returns on its own. In layman's terms, yes the tide is falling but NOVA was already a lot closer to the shore. We re-emphasize this as increasingly the theme that we believe will ultimately drive defensive outperformance for both RUN and NOVA in 2023, noting that recent uncertainties increasingly argue for an ownership model, vs passthrough origination. We reiterate ratings accordingly noting commentary from SPWR on direct ABS market access at its recent earnings call suggests more of this theme. **Buy RUN ; near offensive opportunity given differing funding sources.** Downstream we continue to prefer SEDG over ENPH; we see ENPH most exposed to funding risk to tail.


**Refer to important disclosures on page 11 to 15. Analyst Certification on page 9. Price Objective Basis/Risk on page 7.**

# When a weakness becomes a strength

As we continue to parse real time movements in resi solar we dive deeper on consumer trends via the prism of movements in the ABS. Critically, we see a rapid deceleration in prepayments on solar loans as the key underappreciated nuance on sector trends that stands over and above cost of capital headwinds for loan providers in particular and which in our view speaks to the end of the "cheap money" era in more ways than one. While in 2022, the concerns on rapidly increasing and seemingly unbounded (at that time) cost of capital increases dominated the story for resi, in 2023, and in just the most recent weeks of 2023 there are now three distinct headwinds. These are **(1)** cost of capital as mentioned already which remains elevated vs legacy trends but which is ultimately felt by all providers **(2)** unique factors between lenders that include default and prepayment spreads and the rapidly narrowing spread between the two and **(3)** the response to increasing credit uncertainty from a range of private lenders that backstop forward flow and syndicated lending agreements. As a whole, these dominate the resi financing landscape.

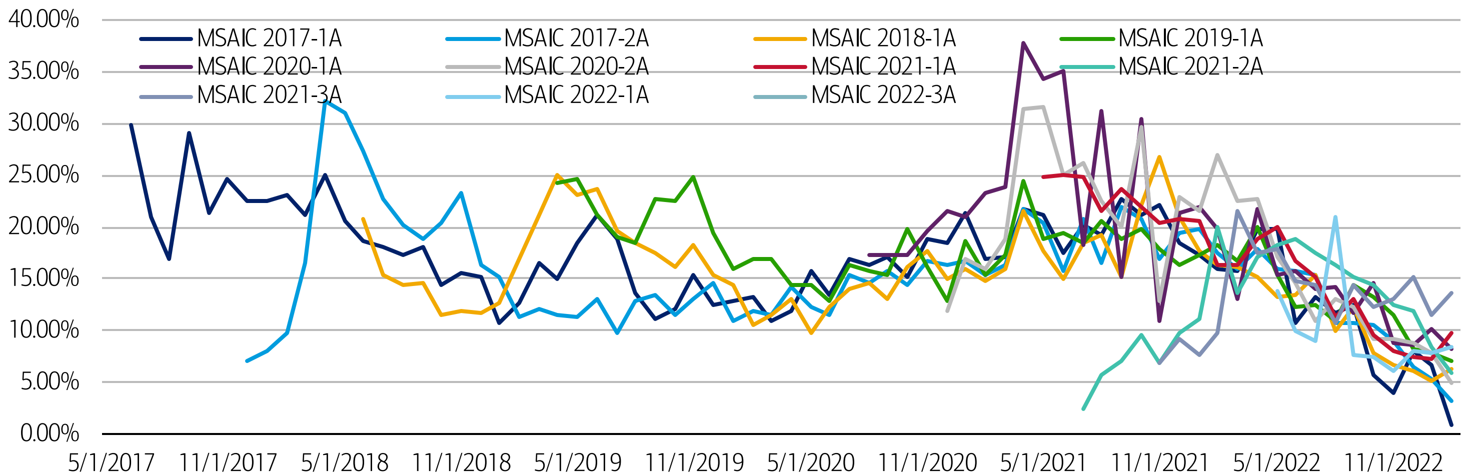
With Mosaic now in the market ahead of the Fed's hotly watched decision, forthcoming ABS will pitch the upside of a stall in the upward advance of risk free rates against an unknown bound on spreads with credit pullback and limited deal flow the clear headwinds to watch. That said, structurally, we focus further on loan prepayment trends as a structural challenge that we believe is uniquely onerous for those private peers mentioned and thus stand as a net positive for our public peers operating in the same landscape. We acknowledge that while this could be perceived as a "best house on a bad block" argument, we believe the magnitude of differences between loan providers is underappreciated and at the end of the day reflects on an all-weather business model that deserves credit when its defensive attributes shine through. We expect that can be the case in 2023 supporting growth and market share gains for the largest players and ultimately increasing consolidation across what remains a heavily fragmented industry.

## What really drives prepayments on a solar loan?

While we have covered in detail the mechanics of a solar loan, in recent years there has been a broad discrepancy between the way a solar loan *should work* and the way a solar loan *actually works*. Conceptually, issuer loan maturities are indeed broadly linked to the weighted amortization schedule of the underlying assets which is generally 20 years or longer and fully contracted through that timeframe. But a series of likely prepayments or "unscheduled" principal have historically moved up expected maturities for many of the larger issuers in the space. Indeed, most solar loans at issuance have historically carried a weighted average life (WAL) in the 5-8 year range against conditional prepayment rates (CPR) in the 5-10% range. For those less familiar, WAL is a duration metric delineating when half the principal balance is expected to be outstanding.

These prepayment trends matter substantively for both the loan providers IRR and ability to recycle cash, as we have already covered in our prior analysis, but what's underappreciated is exactly why they were happening in the first place, and by contrast, why they're not happening now. While we have explained in detail how there is typically is an embedded "balloon" structure in solar loans to account for tax credit pass through back to the lender in exchange for an immediate interest holiday, the trend that's less obvious, but frankly more impactful is mortgage refinancing. Our recent discussions with lenders support roll up of solar loans into home refinancing as one of the key drivers behind outsized prepayment trends in recent years which has been readily apparent in Fin-Tech based lenders profiles. We note the bulk of solar financings occur via direct lending and forward flow agreements with banks, large asset managers and insurers that similarly backstop mortgage refinancing thus making this an obvious opportunity. As a proof point, we show our interpolated estimate of Mosaic's historic prepayment trends across ABS issuances without seasonal adjustment against the Mortgage Banker Associations' refinancing index. We note a broadly similar profile that began to break down substantively as of the peak of 2021 alongside the Fed's initial movements.

**Exhibit 1: Mosaic Prepayment Trends**
We back out prepayment trends for Mosaic issuances, which as a group, broadly peaked in late 2021, early 2022 as the FED indicated it would begin to tighten




**Source:** BofA Global Research, Data aggregated from Bloomberg, CPR is Calculated by BofA

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**Exhibit 2: Mortgage Refinancing Index**
Coincidentally, we see a near like trend in mortgage refinancing. Discussions support this as a significant driver, given capacity to do an accretive cash out refinancing while simultaneously eliminating a second lien on the house, which can be problematic for resale


**Source:** BofA Global Research, Mortgage Bankers Association

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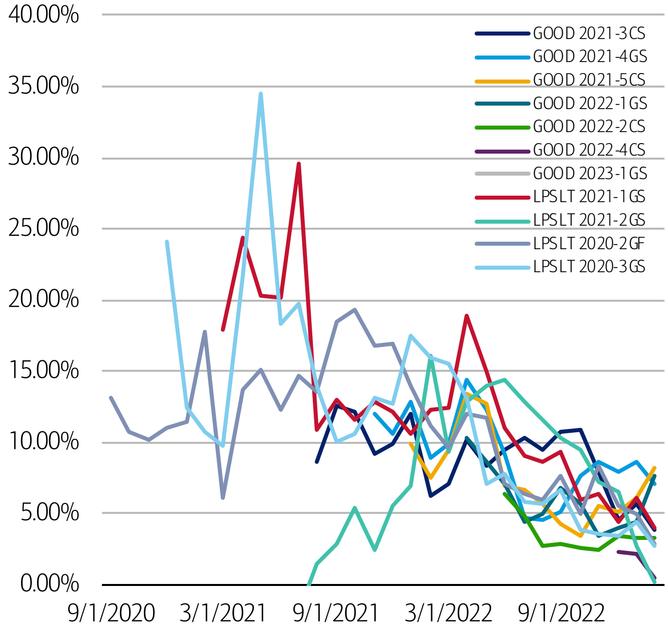
With fixed rate 30-year mortgage rates trending well over 6.5% nationally, the refinancing opportunity is broadly closed for now and the foreseeable future which likely means the prepayment trends we see today are sticky. Notably, our understanding is that in most cases, realized prepayments were well in excess of expectations, and thus risks of a ratings action seems unlikely on this alone. What's paradoxical, however, is that, Sunnova, who has the most optical exposure to these trends, having called them out in a guidance cut late last year, is actually arguable to be a net winner vs its peers that were significantly more heavily reliant on them. The reality, as NOVA management readily admits, is that given its lack of an internal refinancing team, NOVA was never a material beneficiary of the refinancing trend and frankly always had prepayments that disappointed vs its peers. Again, we reiterate that the "peers" we discuss here are actually Fin-Tech companies at their core, backstopped by syndicated lenders and a litany of forward flow agreements. In NOVA's case while yes, it is seeing lower prepayments alongside the group, the change is from the mid-high single digits to the mid-low single digits in an 18-month time frame vs the peers realizing 10%+ annualized drop in some cases vs late 2021. Again, to backstop our findings, we show our interpolated assessment of Goodleap prepayments across issuances vs NOVA on the right.

**Exhibit 3: GoodLeap Prepayment Trends**
GoodLeap (LoanPal) shows a similar trend to Mosaic albeit against less overall market seasoning




**Source:** BofA Global Research, Data aggregated from Bloomberg, CPR is Calculated by BofA

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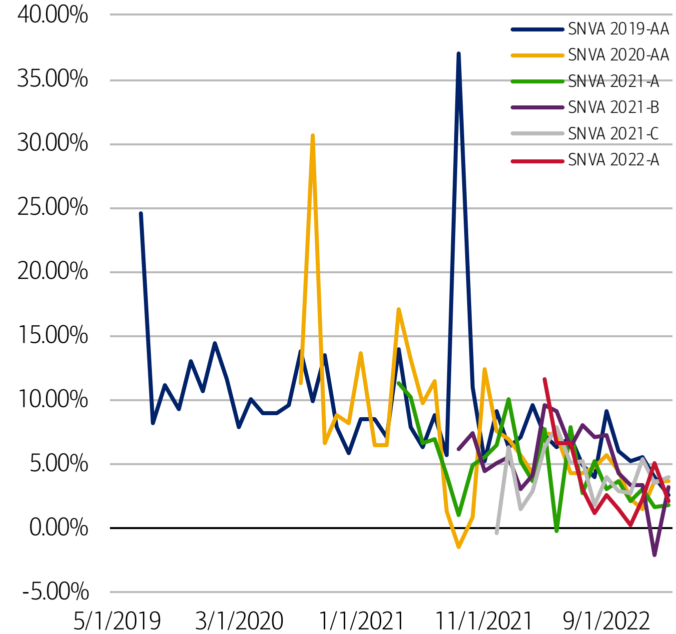
**Exhibit 4: NOVA Prepayment Trends**
Sunnova prepayment trends were actually never very good in the first place. Paradoxically, this is now a significant net advantage vs peers




**Source:** BofA Global Research, Data aggregated from Bloomberg, CPR is Calculated by BofA

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We note that the impact to realized returns are not at all negligible from the trends shown above. For example, if a solar lender was realizing a 12% prepayment against a 0.99% APR loan with a 35% dealer fee (which were not uncommon in 2021), we estimate that that same lender has to increase to a minimum 3.99%-4.99% APR simply to breakeven **before accounting for a higher cost of capital**. Indeed, simply raising rates is likely an unpalatable option at its core which is why we expect dealer fees to continue to be stretched. By contrast, in a business less reliant on prepayment trends, the implied increase to breakeven is ~100bps less. Sticker shock is ultimately the challenge that's faced here and as an ease of reference, we show the effective interest expense that results out of the dealer fee considered above and the coupon rates shown below. Taken together and acknowledging that as a base case, solar loans will generally price at some spread above mortgage rates, it becomes clear why 2.99-3.99% APR is the lowest you can find in the market today.

**Exhibit 5: Comparing Prepayments vs Coupon Rates and Output Returns**
Using the below waterfall, if a lender was at 12% prepayments, a drop to 6% at the same coupon rate equates to a 270bps hit on returns. To make that up, the implied increase in lending rates has to be 200-300bps even accounting for higher risk free rates rolling through to demand

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Effective | | 4.2% | 5.8% | 7.3% | 8.8% | 10.4% | 11.9% | 13.4% | 15.0% |
| Consumer Coupon | | 0.99% | 1.99% | 2.99% | 3.99% | 4.99% | 5.99% | 6.99% | 7.99% |
| | 3% | 6.8% | 8.0% | 9.1% | 10.3% | 11.5% | 12.7% | 13.9% | 15.2% |
| | 6% | 8.4% | 9.4% | 10.5% | 11.7% | 12.8% | 14.0% | 15.2% | 16.4% |
| Prepayments | 9% | 9.9% | 10.9% | 11.9% | 13.0% | 14.2% | 15.3% | 16.4% | 17.6% |
| | 12% | 11.2% | 12.3% | 13.3% | 14.4% | 15.4% | 16.6% | 17.7% | 18.8% |
| | 15% | 12.6% | 13.8% | 14.7% | 15.7% | 16.7% | 17.8% | 18.9% | 20.0% |
| | 18% | 14.4% | 15.1% | 16.0% | 17.0% | 17.9% | 19.2% | 20.1% | 21.2% |

**Source:** BofA Global Research estimates

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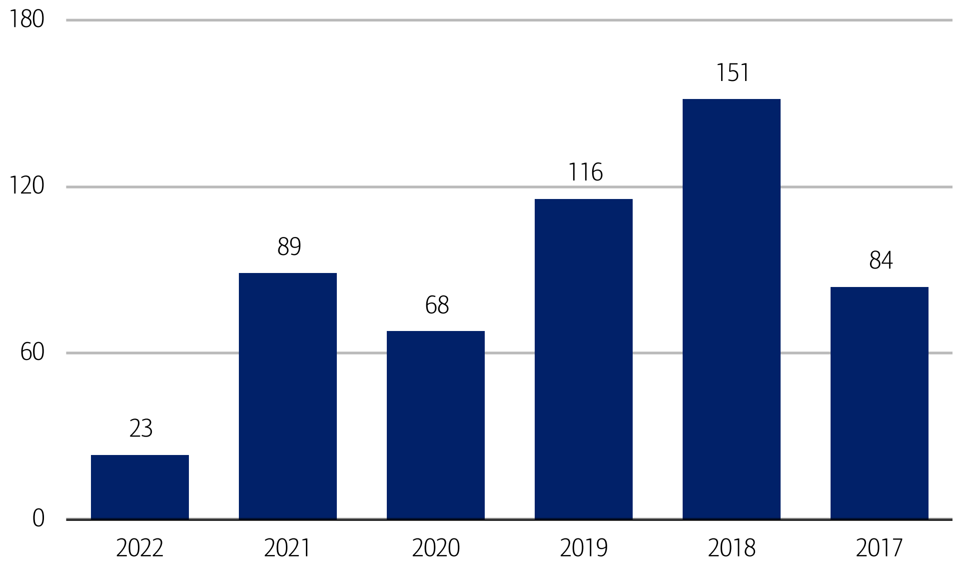
As a further nuance, the below assumes a static comparison in annualized defaults at 100bps noting that this is the area that NOVA really excels vs peers. Per its latest 10-k, aggregate non-performing loans (more than 180 days without payment) have on average trended well below 100bps with latest 2022 issuances trending at just 23 bps.

**Exhibit 6: NOVA Non-Performing Loans by Origination Year**

Generally trending well below 100bps, 2022 issuances are continuing to see an improving trend




**Source:** BofA Global Research, Company Reports

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## Where is all this "other" money?

We note that the ABS market itself is the minority share of solar lending that we see today. Consider that if 80-90% of the market is financed, and the majority comes in the form of loans (>70%) the implied conventional lending market for solar is in excess of $12bn in 2022. We note average loans per customer are often now indicated around $40k which includes some level of blending for batteries, EV chargers and other accessories too. Critically, even under typical overcollateralization terms for securitization or direct lending this points to at least this level. We compare this with the size of the issued ABS market at $4.2bn in 2022 across both lease and loan as a key footnote worth watching.

Where is all the other money coming from? That's a far more tricky question to answer but one that we see increasingly as a constraint to watch around regional bank pressures. CS we acknowledge is a relatively key player in the securitization market historically as an ABS manager, but we believe its roll there is relatively replicable by peers if necessary. We think the thing to actually watch here amongst these Fin-Tech forward peers is just how many are left in the market by the end of 2023. We emphasize that in 2021, there was a flurry of interest from lenders into resi solar. Fifth Third bought Dividend Solar in late 2021, Goldman Sachs bought GreenSky in late 2021, PowerPlay entered the home solar market in early 2022 and student lender, CommonBond made a wholesale pivot into solar loans mid last year. Today CommonBond has closed its doors, and GS plans to rapidly build its consumer lending units have now somewhat infamously gone sideways. We note GS attributed a significant build up in credit loss provisions associated with GreenSky in 2022 as a result of the pivot to on balance sheet lending, and just over a year after acquisition media headlines suggest it is now considering a sale of the unit.

The reality as we see it is that while there were a plethora of peers that won from this low friction speed to market model in 2020-2022, 2023 is an entirely different story in the solar loan market, and having a balance sheet vs renting one from others is now formally the defensive posture. While we expect headlines to keep performance choppy we expect that both RUN and NOVA can outperform "market" trends on this basis and likely will take share. Downstream we reiterate a preference for SEDG over ENPH with SEDG's C&I exposure a clear net positive. While we see ENPH's cash position attracting a safety bid in the environment, inability to avoid these exposures keep us Neutral.

**Exhibit 8: Solar Loan ABS Summary**

Key factors across ABS loan issuances. While we do not see this as an overriding issue, we note CS has relatively routine involvement in these markets

| Issuance | Issue Date | Maturity Years | WAL At Issuance | Coupon (A Tranche) | Bid YTM Current | Offering Manager |
|---|---|---|---|---|---|---|
| SUNRN 2015-1A | 7/9/2015 | 22.3 | 6.98 | 4.40% | * | CS |
| SOCTY 2016-1 | 2/29/2016 | 23.5 | 5.96 | 5.25% | * | Jnt |
| SOCTY 2017-A | 1/27/2017 | 26.5 | 5.44 | 4.97% | * | CS |
| MSAIC 2017-1A | 2/2/2017 | 19.3 | 4.06 | 4.45% | 6.12% | Jnt |
| DIV 2017-1 | 10/6/2017 | 15.0 | 4.85 | 4.05% | 5.92% | CS |
| MSAIC 2017-2A | 10/27/2017 | 20.3 | 4.41 | 3.82% | 6.49% | DB |
| DIV 2018-1 | 4/19/2018 | 15.3 | 2.04 | 2.61% | * | CS |
| MSAIC 2018-1A | 4/20/2018 | 20.3 | 4.53 | 4.01% | 6.33% | Jnt |
| VSLR 2018-1A | 6/11/2018 | 25.1 | 9.36 | 4.73% | 6.38% | Jnt |
| MSAIC 2018-2GS | 6/29/2018 | 20.9 | 4.81 | 4.20% | 6.35% | GS |
| SNVA 2018-1A | 11/8/2018 | 25.3 | 8.96 | 4.87% | 6.46% | CS |
| SNSTR 2018-1 | 11/28/2018 | 25.7 | 8.24 | 5.68% | * | DBS |
| DIV 2018-2 | 12/7/2018 | 15.8 | 2.08 | 3.72% | * | CITG |
| SUNRN 2018-1 | 12/20/2018 | 26.1 | 9.57 | 5.31% | 5.93% | Jnt |
| MSAIC 2019-1A | 2/6/2019 | 20.8 | 4.91 | 4.37% | 6.15% | Jnt |
| SUNRN 2019-1A | 6/6/2019 | 31.3 | 6.62 | 3.98% | * | CS |
| SNVA 2019-AA | 6/27/2019 | 23.3 | 5.98 | 3.75% | * | Jnt |
| DIV 2019-1 | 7/11/2019 | 16.4 | 4.69 | 3.67% | 6.32% | CITG |
| SUNRN 2019-2 | 10/28/2019 | 31.9 | 7.26 | 3.61% | 6.37% | Jnt |
| MSAIC 2019-2A | 11/6/2019 | 17.5 | 4.93 | 2.88% | 5.60% | Jnt |
| SNVA 2020-1A | 2/12/2020 | 31.9 | 8.72 | 3.35% | 6.54% | CS |
| LPSLT 2020-1GS | 6/9/2020 | 24.3 | 11.1 | 3.78% | * | GS |
| SNVA 2020-AA | 6/19/2020 | 24.3 | 6.96 | 2.98% | 6.38% | CS |
| MSAIC 2020-1A | 6/25/2020 | 23.1 | 4.82 | 2.10% | 5.38% | Jnt |
| LPSLT 2020-2GF | 7/22/2020 | 24.3 | 5.92 | 2.75% | 6.25% | Jnt |
| VSLR 2020-1A | 9/30/2020 | 28.4 | 6.83 | 2.21% | 6.38% | Jnt |
| MSAIC 2020-2A | 10/7/2020 | 23.4 | 5.08 | 1.44% | 5.61% | Jnt |
| LPSLT 2020-3GS | 11/23/2020 | 24.8 | 5.69 | 2.47% | 6.82% | GS |
| SNVA 2020-2A | 11/30/2020 | 32.6 | 8.71 | 2.73% | 6.63% | CS |
| LPSLT 2021-1GS | 1/7/2021 | 24.8 | 5.44 | 2.29% | 5.94% | GS |
| SNVA 2021-A | 2/16/2021 | 24.9 | 5.06 | 1.80% | 6.54% | CS |
| SUNRN 2021-1A | 3/17/2021 | 28.9 | 6.34 | 2.46% | 6.37% | CS |
| MSAIC 2021-1A | 3/18/2021 | 23.8 | 5.11 | 1.51% | 5.24% | Jnt |
| LPSLT 2021-2GS | 3/31/2021 | 25.0 | 5.94 | 2.22% | * | Jnt |
| SNVA 2021-1 | 6/17/2021 | 33.1 | 7.46 | 2.58% | 6.57% | CS |
| MSAIC 2021-2A | 6/25/2021 | 24.1 | 5.31 | 1.64% | * | Jnt |
| GOOD 2021-3CS | 6/30/2021 | 25.2 | 5.91 | 2.10% | 6.55% | Jnt |
| SNVA 2021-B | 7/27/2021 | 25.3 | 5.07 | 1.62% | 5.40% | CS |
| GOOD 2021-4GS | 9/8/2021 | 25.3 | 5.77 | 1.93% | 6.40% | GS |
| SUNRN 2021-2A | 9/29/2021 | 33.9 | 6.27 | 2.27% | 4.86% | Jnt |
| MSAIC 2021-3A | 9/29/2021 | 29.3 | 5.24 | 1.44% | 5.55% | Jnt |
| SNVA 2021-C | 10/26/2021 | 25.6 | 5.15 | 2.03% | 4.89% | CS |
| GOOD 2021-5CS | 11/17/2021 | 25.6 | 5.82 | 2.31% | 6.40% | Jnt |
| GOOD 2022-1GS | 2/16/2022 | 25.8 | 5.71 | 2.70% | 7.08% | GS |
| SNVA 2022-A | 2/24/2022 | 25.9 | 5.18 | 2.79% | 5.55% | CS |
| MSAIC 2022-1A | 3/17/2022 | 29.9 | 5.38 | 2.64% | 5.26% | Jnt |
| SUNRN 2022-1A | 5/4/2022 | 34.4 | 7.01 | 4.75% | 6.54% | Jnt |
| GOOD 2022-2CS | 5/11/2022 | 26.1 | 5.74 | 4.00% | 6.51% | Jnt |
| BREN 2022-1 | 5/26/2022 | 39.4 | 6.02 | 4.88% | 6.45% | Jnt |
| SNVA 2022-1 | 6/27/2022 | 34.1 | 6.39 | 4.95% | 6.49% | CS |
| GOOD 2022-3CS | 8/10/2022 | 26.3 | 5.56 | 4.95% | 6.09% | Jnt |
| MSAIC 2022-2A | 8/10/2022 | 29.9 | 5.28 | 4.38% | 5.12% | Jnt |
| SNVA 2022-B | 8/17/2022 | 26.4 | 5.07 | 5.00% | 6.79% | CS |
| GOOD 2022-4CS | 11/10/2022 | 31.7 | 5.64 | 5.30% | 6.45% | Jnt |
| SNVA 2022-C | 11/10/2022 | 26.7 | 3.95 | 5.30% | 6.20% | CS |
| DSD 2022-1A | 12/14/2022 | 39.9 | 4.57 | 5.60% | * | CS |
| MSAIC 2022-3A | 12/15/2022 | 30.3 | 5.5 | 6.10% | 5.17% | Jnt |
| MSAIC 2023-1A | 2/15/2023 | 30.3 | 5.87 | 5.32% | 5.37% | Jnt |
| GOOD 2023-1GS | 2/23/2023 | 31.9 | 6.73 | 5.52% | 6.64% | Jnt |

**Source:** BofA Global Research, Bloomberg

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## Price objective basis & risk

### Enphase Energy (ENPH)

Our $250/sh PO is based on an 75/25 weighted avg of EV/EBITDA and discounted cash flow (DCF) methodology - DCF embedded at 25% to keep the valuation anchored to the intrinsic valuation and EV / EBITDA at 75% to reflect the investor sentiment on the Cleantech space and ENPH. Weighted EV/EBITDA/sh value is $262 and weighted DCF/sh is $172. We add an incremental $11/sh of value from the IRA credit value.

EV/EBITDA approach:
- Comps based on solar Balance of System (BOS) universe given more tech differentiation and somewhat similar margin profiles (ENPH at a premium)
- Growth Adj. EV/EBITDA multiple using relative premium observed to the rest of the BOS comp universe
- Average value between '23 and '24 implied EV/EBITDA valuation of '23 at 37x and '24 at 28x respectively vs. our EBITDA est.

DCF approach:
- Derive FCFE by removing the contribution from stock-based compensation to FCF from 2021 through 2030
- FCFE discounted by 12.5% given rising risk free rate expectations
- Given high growth and expanding opportunity set, we attribute a 20x terminal multiple

Downside risks: (1) execution risks around financial and growth targets, (2) product risks around performance, (3) competitive risk and ability to maintain share, (4) partner risk around reliance on contract manufacturers, (5) policy risk around shifts in subsidy and incentives for resi solar, (6) new opportunities do not meet expectations

### SolarEdge Technologies (SEDG)

Our $393/sh PO is based on an 75/25 weighted EV/EBITDA multiple/DCF methodology. We use a 75/25 weighting noting that the sector broadly trades on a multiple basis, which is all the more appropriate in a high-growth backdrop. Our EV/EBITDA multiple valuation is $430 and our DCF valuation is $283.

EV/EBITDA approach:
- Comps based on Balance of System (BOS) solar peers
- We apply a 9x premium vs BOS peers to '23E EBITDA and 7x to '24, which is in line with where the stock has traded historically on a 1yr forward basis. This nets out to 24x 2023E and 19x 2024E EBITDA, respectively.

DCF approach:
- We derive FCFE by removing the contribution from stock-based compensation to FCF from 2020 through 2030
- FCFE discounted by 14.1% cost of capital based on 4% risk-free rate 6.25% risk premium and three-year weekly beta
- Given high growth and expanding opportunity set, we attribute a 17.5x terminal multiple on free cash flow

Downside risks: (1) execution risks around financial and growth targets, (2) product risks around performance, (3) competitive risk to maintain share, (4) partner risk for contract manufacturers, (5) policy risk around shifts in subsidy and incentives for solar.

Upside risks: (1) execution above financial and growth targets, (2) policy implementation supporting acceleration in adoption of solar and storage, (3) new opportunities exceed expectations, (4) reduction in discount rates attributed by equity investors.

**Sunnova Energy (NOVA)**
We arrive at our $33/share price objective as follows. We value the PowerCo portion of the company by taking NPV equal to Net Customer Value (excl. Net Cash), equivalent to discounting cash flows from the existing asset by an unlevered 7% discount rate. We value expected future installed assets through 2029 on a DCF basis with cash flows discounted by 8% for leases and loans with an additional 14% discount rate on the NPV given future execution risk, in-line with peers. We assume ITC extension through 2032 and include a 6x terminal value multiple on 2029E NPV. We net out the NPV of G&A expense, including non-cash SBC costs and future expected corp capital needs. We attribute credit for 30% of estimated renewal value.

Downside risks to PO being achieved: NOVA is particularly exposed to rate sensitivity, credit spreads, net metering policies, and risk of broadly competitive environment for customer acquisition squeezing development margins.

Upside risks to PO being achieved: Better than expected recovery in rates and capital market conditions, better than expected growth prospects, better NEM 3.0 outcome, and if the ITC is extended beyond the current schedule.

**SunPower Corp. (SPWR)**
Our $14/sh PO is based on a combination of existing contracted assets (PowerCo) and growth (DevCo). For Devco we use a DCF based on FCF to equity ests from '22 to '29. For this Devco we apply a 7x terminal value multiple. We apply a 12% discount rate, in-line with our approach for resi solar peers which reflects recent market volatility and higher execution risk on long term growth. We add back the net cash position, and MtM valuation of 1.5mn ENPH shares. For the PowerCo, we include value for SPWR's stake in its Sunstrong JV, with 20% credit for renewal value stake, in-line with our approach for resi peers.

Upside risks 1) better than expected pricing environment, 2) improving margins/cost structure, 3) declining input costs., 4) better than downstream planned sys biz expansion, and 5) reduced customer acquisition costs.

Downside risks 1) worse/declining price environment, 2) declining margins or worse than expected cost structure, 3) worsening liquidity position4) worse Chinese/global demand environment, 5) worse execution on downstream systems biz, 6) tech fails to live up to expectations.

**SunRun (RUN)**
We arrive at our $46.00/share price objective in two pieces: PowerCo which is the DCF of existing home contracts is benchmarked against a 7% discount rate & DevCo which is the DCF of future years of subscribing new customers is benchmarked at a 8% discount rate. In each case, this offers a cushion above RUN's legacy cost of debt as well as our future projections.

We discount the value creation of the future years of subscribing customers at a 13% discount rate and apply an 8x terminal value multiple on our 2029E NPV discounted back to 2022. We further include value from solar renewable energy credits for future DevCo assets on a DCF basis at a 13% discount rate and net out holding company recourse debt and cash.

Downside risks: are associated with the ability to meet cost reduction expectations, MW deployment guidance, Net Energy Metering (NEM), and access to debt capital markets given the highly leveraged strategy employed.

## 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** | | | | |
| | 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 |
| | Allete Inc | ALE | ALE 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 |
| | Cheniere Energy Inc | LNG | LNG US | Julien Dumoulin-Smith |
| | CMS Energy | CMS | CMS US | Julien Dumoulin-Smith |
| | DTE Energy | DTE | DTE US | Julien Dumoulin-Smith |
| | Duke Energy | DUK | DUK US | Julien Dumoulin-Smith |
| | Emera Inc | YEMA | EMA CN | Dariusz Lozny, CFA |
| | 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 |
| | FREYR Battery | FREY | FREY US | Julien Dumoulin-Smith |
| | FTC Solar | FTCI | FTCI US | Julien Dumoulin-Smith |
| | Hydro One | YH | H CN | Dariusz Lozny, CFA |
| | Maxeon Solar Technologies | MAXN | MAXN US | Julien Dumoulin-Smith |
| | New Fortress Energy | NFE | NFE US | Cameron Lochridge |
| | 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 |
| | SolarEdge Technologies | SEDG | SEDG 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 |
| | Xcel Energy Inc | XEL | XEL US | Julien Dumoulin-Smith |
| **NEUTRAL** | | | | |
| | Alliant Energy Corporation | LNT | LNT US | Julien Dumoulin-Smith |
| | AltaGas | YALA | ALA CN | Dariusz Lozny, CFA |
| | American Electric Power | AEP | AEP US | Julien Dumoulin-Smith |
| | ChargePoint Holdings | CHPT | CHPT US | Alex Vrabel |
| | Clearway Energy | CWENA | CWEN/A US | Julien Dumoulin-Smith |
| | Clearway Energy | CWEN | CWEN US | Julien Dumoulin-Smith |
| | Consolidated Edison | ED | ED US | Julien Dumoulin-Smith |
| | Constellation Energy Corp | CEG | CEG US | Paul Zimbardo |
| | Enphase Energy | ENPH | ENPH US | Julien Dumoulin-Smith |
| | Entergy | ETR | ETR US | Paul Zimbardo |
| | Essential Utilities | WTRG | WTRG US | Julien Dumoulin-Smith |
| | First Solar, Inc. | FSLR | FSLR US | Julien Dumoulin-Smith |
| | Generac Holdings Inc. | GNRC | GNRC US | Julien Dumoulin-Smith |
| | Hannon Armstrong | HASI | HASI US | Julien Dumoulin-Smith |
| | Idacorp | IDA | IDA US | Paul Zimbardo |
| | NextEra Energy | NEE | NEE US | Julien Dumoulin-Smith |
| | Nextracker Inc | NXT | NXT 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 |

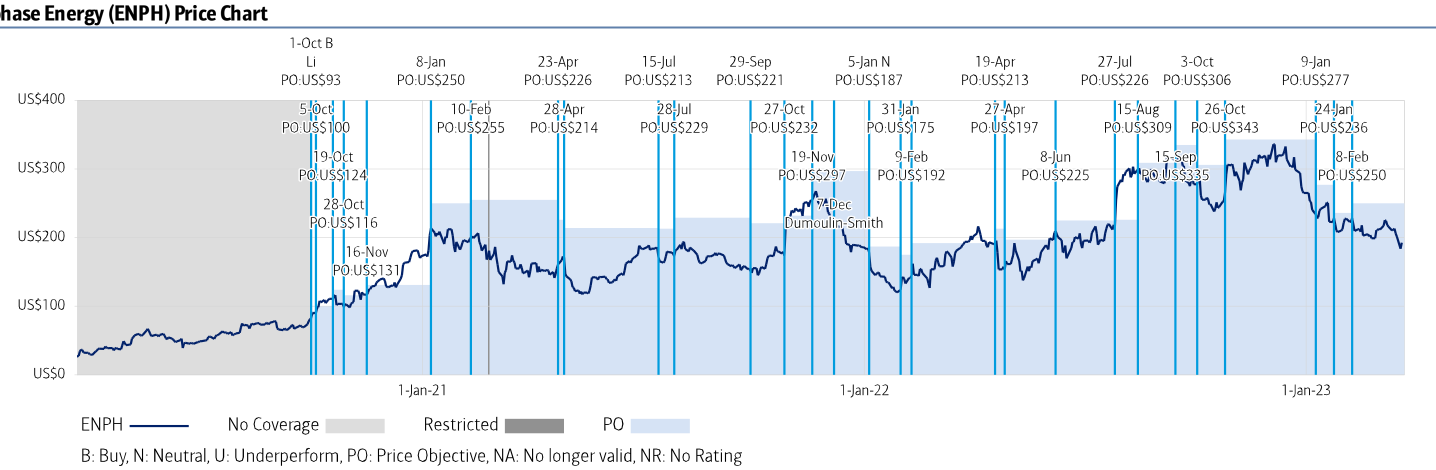
**North America - Utilities and Alt Energy Coverage Cluster**

| Investment rating | Company | BofA Ticker | Bloomberg symbol | Analyst |
|---|---|---|---|---|
| | Southwest Gas Holdings | SWX | SWX US | Julien Dumoulin-Smith |
| | Stem, Inc. | STEM | STEM US | Julien Dumoulin-Smith |
| | TransAlta Corp | TAC | TAC US | Dariusz Lozny, CFA |
| | TransAlta Corporation | YTA | TA CN | Dariusz Lozny, CFA |
| | TransAlta Renewables Inc. | YRNW | RNW CN | Dariusz Lozny, CFA |
| **UNDERPERFORM** | | | | |
| | 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 |
| | Evergy, Inc | EVRG | EVRG US | Julien Dumoulin-Smith |
| | Eversource Energy | ES | ES US | Paul Zimbardo |
| | EVgo Inc. | EVGO | EVGO US | Alex Vrabel |
| | FirstEnergy | FE | FE US | Julien Dumoulin-Smith |
| | Fluence Energy | FLNC | FLNC US | Julien Dumoulin-Smith |
| | Fortis | YFTS | FTS CN | Dariusz Lozny, CFA |
| | Fortis Inc | FTS | FTS US | Dariusz Lozny, CFA |
| | Hawaiian Electric Industries | HE | HE US | Julien Dumoulin-Smith |
| | MDU Resources Group, Inc. | MDU | MDU US | Dariusz Lozny, CFA |
| | MGE Energy | MGEE | MGEE US | Julien Dumoulin-Smith |
| | New Jersey Resources Corp | NJR | NJR US | Julien Dumoulin-Smith |
| | NextEra Energy Partners | NEP | NEP US | Julien Dumoulin-Smith |
| | Pinnacle West | PNW | PNW US | Julien Dumoulin-Smith |
| | Southern Company | SO | SO US | Julien Dumoulin-Smith |
| | Spire | SR | SR 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 |
| | Unitil Corporation | UTL | UTL US | Julien Dumoulin-Smith |

# Disclosures

## Important Disclosures

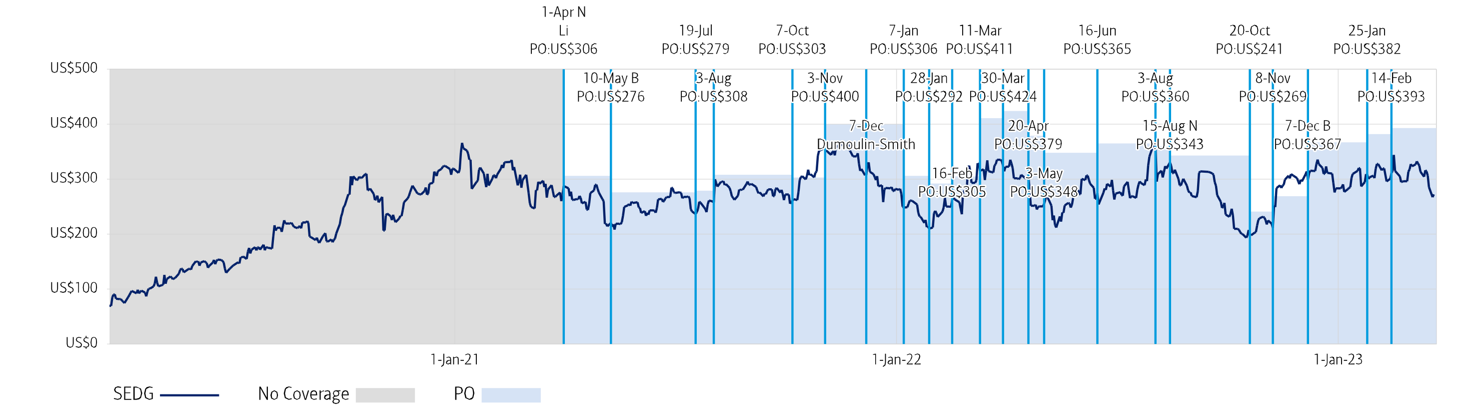
**Enphase Energy (ENPH) Price Chart**




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.

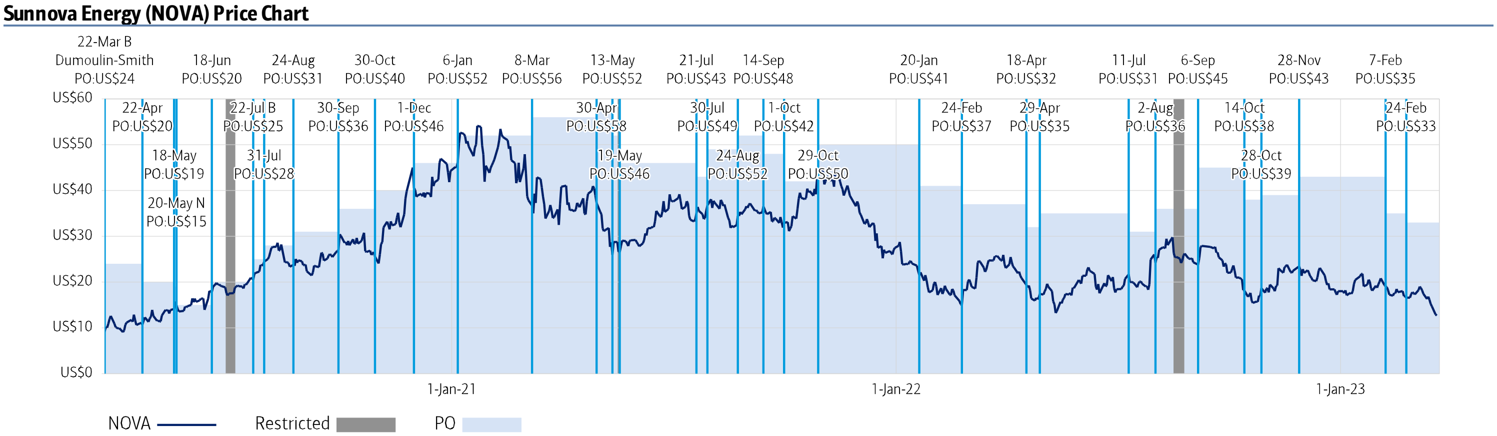
**SolarEdge (SEDG) Price Chart**




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.

**Sunnova Energy (NOVA) Price Chart**

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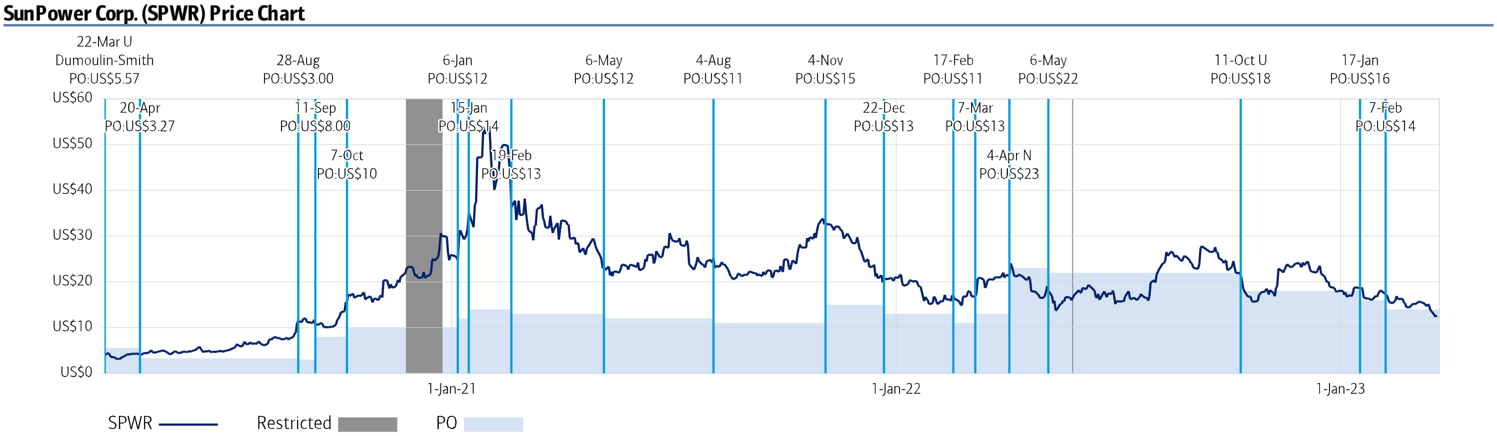
**SunPower Corp. (SPWR) Price Chart**

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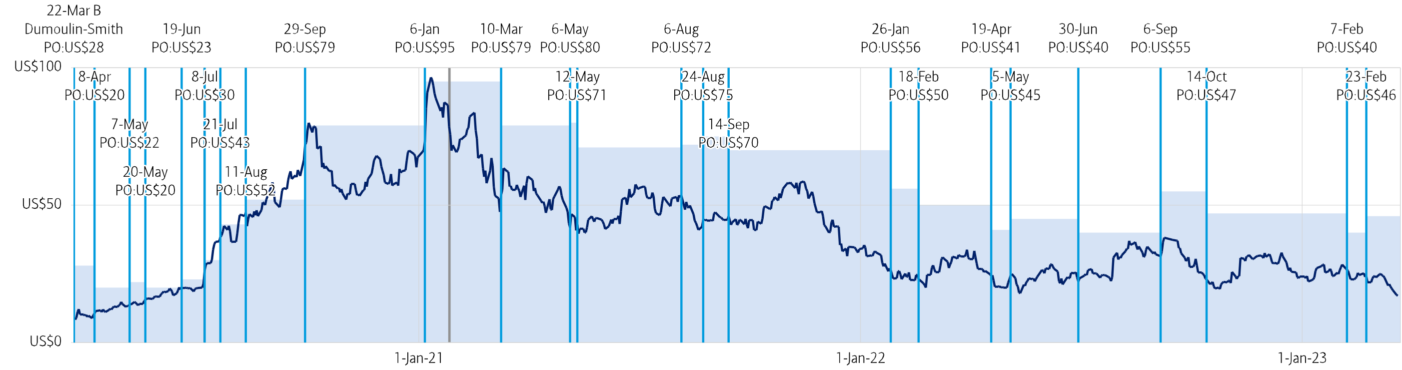
**SunRun (RUN) Price Chart**

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**Equity Investment Rating Distribution: Alternative Energy Group (as of 31 Dec 2022)**

| Coverage Universe | Count | Percent | Inv. Banking Relationships R1 | Count | Percent |
|---|---|---|---|---|---|
| Buy | 8 | 53.33% | Buy | 6 | 75.00% |
| Hold | 2 | 13.33% | Hold | 1 | 50.00% |
| Sell | 5 | 33.33% | Sell | 4 | 80.00% |

**Equity Investment Rating Distribution: Global Group (as of 31 Dec 2022)**

| Coverage Universe | Count | Percent | Inv. Banking Relationships R1 | Count | Percent |
|---|---|---|---|---|---|
| Buy | 1853 | 52.58% | Buy | 1040 | 56.13% |
| Hold | 840 | 23.84% | Hold | 493 | 58.69% |
| Sell | 831 | 23.58% | Sell | 404 | 48.62% |

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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% |

R2 Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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