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US Alternative Energy

Resetting RUN / NOVA for interest rate headwinds. Still heavily undervalued.

Price Objective Change

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Equity
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Cutting RUN to $31, NOVA to $25, but reiterate Buy

We refresh and reassess the valuation for Sunrun Inc (RUN) and Sunnova Energy International (NOVA). RUN and NOVA sell and offer financing for residential solar and energy products. With routine needs to raise debt for that financing effort, interest rate hikes have pressured the business model. With that backdrop we reassess appropriate discount rates and cut our POs from $33 to $25 for NOVA and $45 to $31 for RUN. Our new price objectives imply 67% and 82% potential upside for NOVA and RUN respectively.

It's all about yield: What rate of return, what cost of debt?

RUN and NOVA make money on the spread between asset level returns and the cost of debt to support them. With the cost of debt increasing over the last year and credit market access increasingly challenged, compression in the value of that spread is the main reason behind sustained underperformance in our view. That said, we believe investors are overstating the drop in value. In this note we show how the market is missing the mark.

A 9% discount creates a compelling asset level yield…

To value the existing cash flow streams we solve for a discount rate that creates competitive, cash on cash yield for a prospective buyer. At 9%, we estimate that Sunnova's contracted portfolio is worth $15/share and provides an 11% implied cash yield over the 20+ year contract life.

…consistent with known hurdle rates for YieldCo buyers

This is a reasonable return vs stated Cash Flow Available for Distribution (CAFD) hurdle rates for 'YieldCo' peers that buy similar ex-growth assets in solar. Clearway Energy (CWEN), for example, targets utility-scale CAFD yields in the 9-10% range. We think NOVA's portfolio should deliver a modest premium given the weaker counterparty credit.

Our valuation reflects contracted cash only

Correspondingly we reset the operating company discount rate to 9% from 7% and the development company discount rate to 10% from 8%. Our RUN PO now includes $8.50/share value in the base business and $15/share for NOVA; the discount rate increase reflects a $6 and $7/share negative adjustment in each case. We also move to a 6x terminal / 14% cost of equity for RUN (same as NOVA), from 13% / 8x noting 14% is in line with current yield on RUN's convertible note. In both cases we cut all prospective value for contract "renewals" leaving valuations hinged to contracted cash only. Against our models we see the market baking in equity discount rates in excess of 20%.

Still see value shine through after reducing valuations

We update estimates for both companies in this note for 1Q23 results (pg, 8-9 and 12) which are directionally positive in both cases. We reiterate more tailwinds to come; lower installation costs we expect in 2H23 and additional tax credit upside will help plug cash and capital markets fears. Ending where we started – spreads are what matter and we think they will widen in 2H against an already dislocated set of valuations. Buy.

Glossary
CAFD: Cash Available for Distribution
DCF: Discounted cash flows
DevCo: Development company
kW: Kilowatt
NCCV: Net Contracted Customer Value
OpCo/PowerCo: Operating company
Resi: Residential
YieldCo: Yield Company

PO Changes:
NOVA: $25 from $33
RUN: $31 from $45

Refer to important disclosures on page 18 to 21. Analyst Certification on page 16. Price Objective Basis/Risk on page 15.
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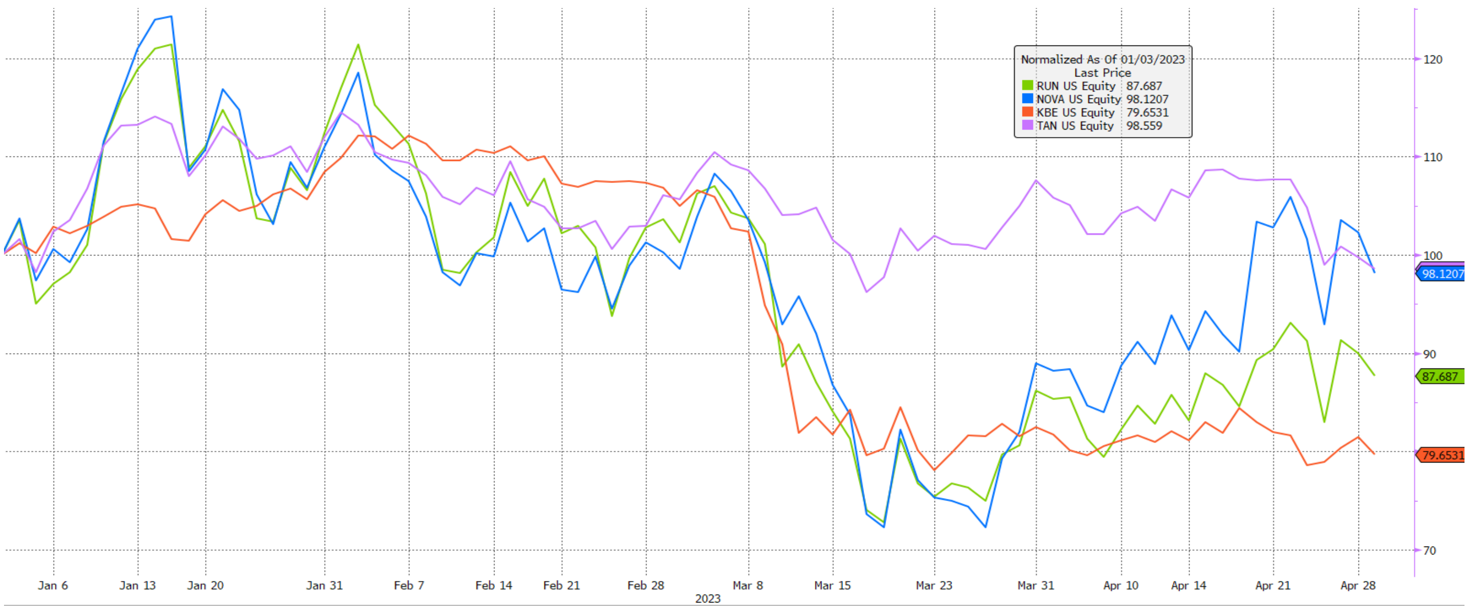
What's the right discount rate for resi?

With shares of residential solar continuing to underperform, we attempt to demystify why. In our view, the answer is simply that the threshold for equity returns on yield-like instruments has gone up. RUN and NOVA have performed more like banks than cleantech peers since the credit crunch fears of March. RUN has staged a weaker recovery which we believe results from a lower valuation mix of contracted assets and more dependency on growth. As this growth and the value created from it ultimately hinges on both capital market access and the cost of capital, broader credit market fears likely drive the discrepancy in share performance.

In any case, the correlation of RUN and NOVA vs banking ETF KBE has been a far stronger match in 2023 than solar (TAN ETF) which bookends the narrative that rates are the focus for investors. The reasoning for that the correlation with financials is logical – banks make less money when the net interest margin between assets and deposits collapses and NOVA and RUN look less valuable when their ability to capture relative yield does the same.

Exhibit 1: NOVA and RUN vs Banking ETF KBE and TAN Solar ETF

NOVA and RUN have performed more like banks in 2023 than solar peers as the focus from investors is on relative margin between asset and liability yields



Source: Company Filings, Bloomberg, & BofA Global Research

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That is of course the theory – the practice Is quite a bit different. Unlike banks, RUN and NOVA mostly have self-amortizing, non-recourse debt as a "liability" with the cost of the debt typically fixed or otherwise hedged in full over its term which limits refinancing risk. Moreover, unlike banks that capture spreads between liquid assets, rooftop solar have capacity to expand margins through bespoke service offerings, new products, and geographies. Moreover, with the "price to beat" a utility bill which is similarly interest rate sensitive, the business model is partially hedged on cost of capital – we stress this as a longer-term theme and one that's clearly not apparent in shares today. But the ultimate question is still what an equity holder should pay for the relative spread in yields on a residential solar asset, and that is where we focus our efforts in this note.

We focus first on how to value the existing assets through the lens of Sunnova's operating business with our goal to arrive at a cash-on-cash yield and sensitize for a discount rate that creates something reasonably attractive. As represented under its "Net Contracted Customer Value" metric (NCCV), these cash flows are not broken out explicitly, but given the relatively high predictability, we have gone through the process of deconsolidation below.

Deconsolidating NOVA's Recurring Revenue

As a starting point, Sunnova has six recurring revenue streams: (1) Revenue from Power Purchase Agreements for solar systems [PPAs], (2) Revenue from lease contracts for solar systems (3) Revenue from the monetization of Solar Renewable Energy Credits [SRECs], (4) Revenue from recurring operations and maintenance on customer loans systems (5) Revenue from grid services and (6) Recurring revenue from service only customers. 5 and 6 are relatively small today but key to NOVA's growth outlook while 1-4 reflect on the size of the cumulative customer base and NOVA's weighted average 22-year contract life with its customers.

PPA revenue and SREC revenue both exhibit significant seasonality as they are production dependent while lease and loan revenue are relatively steady but increasing streams given escalator terms embedded in contracts. With that in mind, we use latest quarterly reported revenues to project expected revenue streams over contract life.

(1) **1Q23 PPA revenue** was $22mm in what is typically the production trough for the year. We assume that this reflects on an 11% realized capacity factor (CF) vs a 15% annualized average to extrapolate full year revenues. For reference, capacity factor is the production from an asset vs its nameplate rating and rooftop solar tends to sit in the mid-teens nationally. Our math is as follows: $22mm / (11% CF / 15% CF) * 4 which effectively annualizes 1Q23 PPA revenues including the production seasonality impact. To extrapolate beyond 2023, we assume a 1.85% blended contract escalator which is based on disclosed information for the collateral pools of NOVA's lease / PPA securitizations that have ranged from 1.5% to 2% in recent years. We further assume 0.30% annual degradation on system performance which is consistent with latest industry trends.

(2) **1Q23 lease revenue** was $31mm and does not reflect seasonality. By consequence, annualizing is as simple as multiplying by 4. Again, we apply a 1.85% blended contract escalator as these contracts are lumped into the same securitizations as power purchase agreements.

(3) **1Q23 SREC revenue** was $8mm and does exhibit seasonality. As there are some nuances around the timing of credit payments, we use the last four years to extrapolate a typical cadence. 1Q payments typically reflect ~14% of FY, thus $8mm in 1Q23 extrapolates to $56mm on an annualized basis. SREC revenues are inherently complex and variable, reflecting both a market impact and a blend of eligibility under several state incentives programs. In general, forward curves for SRECs suggest deflation over time, while grandfathering under the most lucrative programs in New Jersey and Massachusetts is due to expire near the end of the decade. As a result, we reflect increasingly steepening deflation from now till the end of the decade with a large drop as the majority of systems transfer to lower value programs. namely NJ's Transition Renewable Energy Certificate (TREC) and the Tier 1 programs across PJM.

(4) **1Q23 Revenue loan revenue** was $7mm. Again, this revenue stream does not exhibit seasonality and thus annualizing is as easy as simple as multiplying by 4. We apply a 2% escalator to loan revenue which is embedded in contracts and assumed in the cost of service as well, effectively locking in margins against expected inflation.

(5) **1Q23 Grid Services Revenue** is not broken out but flows through the "Other" line. Our discussions with NOVA suggest the value of this is small today, ~$1mm in FY23 with modest growth expected growth over time. In any case, this is a small contributor to contracted value for the company and NOVA does not embed any upside from grid service program expansion.

(6) **Service Customer Revenue** is also not broken out and flows through "Other". NOVA does not break out service customer totals but indicated a heuristic that this group will contribute about $1,000/customer annually over a 17-year average contract life. Based on recent reporting that has shown spikes in the "Other" line items for customer additions, we estimate ~12,000 cumulative service customers. We extrapolate this to mean $12mm in EBITDA per year as a result.

To calculate project level EBITDA of the existing contract book we take all the recurring revenue under Lease / PPA systems against of the cost of system service and net off distributions to tax equity. In all cases, NOVA assumes a cost of $20/kW-yr for system service meaning its average annual cost is ~$150/customer on a typical 7-8kW system. 1081MW of Lease / PPA systems implies $22mm of service costs as a result. As tax equity funds will progressively roll towards their respective "flip dates" (usually 5-7 years after startup) we expect distributions will drop from 20% down to 5% in the latter part of the decade. These flips will inherently expand both the EBITDA and free cash flow of the existing portfolio as it moves forward in time.

Deconsolidating the Customer Loan Book

NOVA's cash flows from customer loans are not considered as revenue outside of the collected payments for routine systems service (#4 mentioned above). That said, total cash flow from the loan book is equivalent to scheduled principal + unscheduled principal prepayments + interest + the margin from system service. The last of these is equivalent to loan revenue (#4) less the cost of service. Against 620MW in the loan book today, the implied annual cost of service is $12mm using the same $20/kW-yr assumption.

NOVA reports that the current carrying value of customer notes receivable is $2.8bn. In layman's terms, this is the principal outstanding under customer loan contracts less provisions for credit losses. 1Q23 reported interest from solar loans was $20mm which implies a blended customer coupon rate of ~2.80%; this number lines up with recent reports on collateral pools within securitizations from KBRA and other ratings agencies. We assume a constant prepayment rate of 1% on the overall balance which is conservative against legacy prepayment speeds and a typical assumption of 5% used in securitizations. See our recent deep dive on prepayments in the solar industry (see report here).

Comparing the cost of debt service

While all the above helps estimate the cash flow coming in, free cash flow is whatever is left after debt service. The cost of debt service is relatively simple to calculate as NOVA gives the outstanding balance under its portfolio of securitizations, and the respective coupons of each securitization are public. Today the weighted average cost of debt under these project debt structures is 4.27%, while the outstanding balance is just over $4bn.

We use these inputs to calculate the principal and interest paid over-time on the outstanding balance of project debt and assume that any principal prepayments from customers in the loan book are "swept", meaning they are used to accelerate pay down of NOVA's outstanding debt obligations. As a result, prepayments are generally cash neutral in our analysis.

The below summarizes all the above and represents a full deconsolidation of the contracted cash flows against NOVA's liabilities, based in its existing portfolio.

Exhibit 2: Deconsolidating Net Contracted Customer Value

We present our estimates for the full deconsolidation of cash flows from NOVA's operating business based on 1Q23 reporting

	Latest Qtr
PPA Revenue	$22
Lease Revenue	$31
SREC Revenue	$8
Loan O&M Revenue	$7
Cumulative Lease + PPA MW	1081
Blended Escalator Assumed	1.85%
Cumulative Loan MW	620
Customer Notes Receivable, Current	$133

	Capacity Factor by Quarter	Seasonal SREC Cadence
Q1	11%	14%
Q2	18%	25%
Q3	19%	32%
Q4	12%	29%
	15.0%	100.0%

Avg Coupon on Customer Loans	2.80%
Wtd average cost of project debt	4.27%

Duration on Customer Loans (yrs)	20
Assumed Constant Prepayments	3%

	Solar Lease / PPA Cash Flows							Solar Loan Cash Flows						Other Cash Flows		Project Debt Service Cash Flows			
NPV ($mm) at 6%	$1,627	$1,766	$395			$2,821		$408	$1,318	$515		$482	($120)	$31	$126				
NPV ($mm) at 9%	$1,256	$1,359	$335			$2,157		$313	$1,067	$449		$420	($100)	$22	$103				($2,918)
Year	PPA	Lease	SREC	SREC Deflation	O&M for Lease / PPA Systems	Post Tax Equity EBITDA	Tax Equity % of Cash Flow	Loan Revenue	Scheduled Principal	Prepayments	Customer Loan Balance Outstanding	Interest from Solar Loans	Loan O&M Servicing	Grid Services	Service Customers	Scheduled Principal Payment	Project Debt Balance	Interest on Project Debt	Total P&I to Service Project Debt
2023	$119	$125	$56		($22)	$178	20%	$29	$109	$86	$2,671	$80	($12)	$1	$12	($116)	$3,888	($175)	($376)
2024	$120	$128	$56	0%	($22)	$181	20%	$29	$112	$80	$2,479	$75	($12)	$1	$12	($121)	$3,688	($166)	($367)
2025	$122	$130	$53	5%	($22)	$184	20%	$30	$115	$74	$2,289	$69	($12)	$1	$12	($126)	$3,487	($158)	($358)
2026	$124	$132	$50	5%	($23)	$199	15%	$30	$118	$69	$2,102	$64	($12)	$1	$12	($131)	$3,288	($149)	($349)
2027	$126	$135	$48	5%	($23)	$226	5%	$31	$122	$63	$1,918	$59	($12)	$1	$12	($137)	$3,088	($140)	($340)
2028	$128	$137	$44	8%	($24)	$230	5%	$32	$125	$58	$1,735	$54	($12)	$2	$12	($143)	$2,888	($132)	($332)
2029	$130	$140	$40	8%	($24)	$233	5%	$32	$128	$52	$1,555	$49	($12)	$2	$12	($149)	$2,687	($123)	($324)
2030	$132	$143	$37	8%	($25)	$237	5%	$33	$132	$47	$1,376	$44	($12)	$2	$12	($155)	$2,485	($115)	($317)
2031	$134	$145	$34	8%	($25)	$241	5%	$33	$136	$41	$1,199	$39	($12)	$2	$12	($162)	$2,282	($106)	($309)
2032	$136	$148	$14	60%	($26)	$245	5%	$34	$140	$36	$1,024	$34	($12)	$2	$12	($169)	$2,078	($98)	($302)
2033	$138	$151	$14		($26)	$249	5%	$35	$143	$31	$849	$29	($12)	$3	$12	($176)	$1,871	($89)	($295)
2034	$140	$153	$14		($27)	$254	5%	$36	$147	$25	$677	$24	($12)	$3	$12	($183)	$1,662	($80)	($289)
2035	$143	$156	$14		($27)	$258	5%	$36	$152	$20	$505	$19	($12)	$3	$12	($191)	$1,451	($71)	($282)
2036	$145	$159	$14		($28)	$262	5%	$37	$156	$15	$334	$14	($12)	$3	$12	($199)	$1,236	($62)	($276)
2037	$147	$162	$14		($29)	$267	5%	$38	$160	$10	$163	$9	($12)	$4	$12	($208)	$1,019	($53)	($271)
2038	$149	$165	$14		($29)	$271	5%	$38	$163	$0	$0	$5	$0	$4	$12	($217)	$802	($44)	($260)
2039	$152	$168	$14		($30)	$276	5%	$39	$0	$0	$0	$0	$0	$5	$12	($226)	$576	($34)	($260)
2040	$154	$171	$14		($30)	$280	5%	$40	$0	$0	$0	$0	$0	$5		($236)	$340	($25)	($260)
2041	$156	$174	$14		($31)	$285	5%	$41	$0	$0	$0	$0	$0	$6		($246)	$95	($15)	($260)
2042	$159	$178	$14		($31)	$290	5%	$42	$0	$0	$0	$0	$0	$6		($95)	$0	($4)	($99)
2043	$161	$181	$14		($32)	$294	5%	$42	$0	$0	$0	$0	$0	$7		$0	$0	$0	$0
2044	$164	$184	$14		($33)	$299	5%	$43	$0	$0	$0	$0	$0	$7		$0	$0	$0	$0

Source: Company Filings, Bloomberg, & BofA Global Research

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Comparing the above to NOVA's reporting

We have some guideposts that suggest our estimates are not far off the mark. On the call, NOVA stated the aggregate balance of undiscounted cash flows is just under $11bn vs our estimate of just over $10.5bn. Similarly, we benchmark $547mm of cash inflows from recurring businesses in the next year vs $553mm suggested in its latest deck. Using the same methodology to calculate Net Contracted Customer Value as the company does, we come up with $2.52bn on a 6% discount rate vs the latest reported level at $2.62bn. There are multiple points of variability to consider that could drive the delta, but we see it likely that our SREC assumptions are more punitive than those used by the company.

What is worth noting is that NOVA's metric for NCCV considers the carrying value for customer notes in the loan book in lieu of the discounted value of cash flows. As a result, this piece of the metric is not sensitized with the discount rate assumed. While this may seem odd, the yield on interest plus prepayments in the loan book is roughly 6% by our math meaning that at a 4-6% range of discount rates, these cash flows nearly foot to the carrying value.

What's the right discount rate = what a buyer would pay

But with all the math aside, the question is still what's the right discount rate to apply to this portfolio? While many investors are keen to use an assumed cost of equity or benchmark off the yield from NOVA's convertible debt, we believe the "right" discount rate is ultimately driven by the cash yield required from a buyer with a sense check of how that compares vs other opportunities. In essence, NOVA's portfolio is "bond like" and thus should be compared with other high yield assets. With that in mind we see Cash Flow Available for Distribution (CAFD) yield suggested by YieldCos CWEN, NEP, and AY as a fair proxy on what a buyer might expect. Notably, YieldCos routinely purchase similar ex-growth assets in utility scale renewables and convert the blow down cash flows into dividends for shareholders. Clearway suggests that it targets as asset CAFD yield in the 9-10% range latest allocated capital which we believe is a fair starting point to benchmark a residential solar portfolio.

With this in mind, our analysis suggests a 9% discount rate is the most appropriate benchmark for what NOVA's operating business is worth today. At 9%, the gross contracted value of unlevered cash flows is $4.6bn while the discounted value of debt service cash flows is $2.8bn. Thus, the equity value is $1.8bn. Against cash flow after debt service of $161mm in year 1 the implied free cash flow yield at the asset level is 8%. Extrapolating beyond tax equity flip, the average free cash flows yield is 10.8% over the 22-year contract life which we believe is an appropriate premium over utility scale assets given the higher risk of counterparty credit. As a further sense check, the implied cash flow multiple of the portfolio at this level is 12.2x which is well aligned to EBITDA multiples seen for utility scale solar assets. Moreover, NOVA's recent lows of $13/share imply an 11% discount rate (assuming no growth) and an average free cash yield of 13%.

Exhibit 3: Translating NOVA Cash Flows to a Blow Down Value at a 9% Discount Rate

We translate the cash flows shown above into a blow down value at a 9% discount rate. We assess this translates toa 12.x cash flow multiple and 10.8% free cash flow yield, both which look reasonable vs other opportunities to deploy capital in renewable assets

NCCV using NOVA's Methodology	
Discount Rate	**6%**
Discounted Value of Contracted Customer Cash Flows	
Contracted Cash Flows (PPA + Lease + Grid Services - O&M)	$3,781
(+) Carrying value of Customer Notes Receivable	**$2,866**
Gross Contracted Value	$6,647
(+) Carrying value of project debt	
Project Debt Total	**-$4,090**
(+) Net Debt, Corporate	
Corporate Debt	**-$1,541**
Cash and restricted Cash	**$421**
Construction in Progress	**$694**
Inventory and Prepaid Inventory	**$387**
Net Contracted Customer value	$2,518
$/sh	$22
Shares Outstanding	*$115*

BofA Methodology	
Discount Rate	**9%**
Discounted Value of Customer Cash Flows	
Contracted Cash Flows (PPA + Lease + Grid Services - O&M)	$2,617
(+) Discounted Value of Loan Book Cash Flows	**$2,012**
Gross Contracted Value	$4,629
(+) Discounted Value of Project Debt Service	
Project Debt Total	**- $2,809**
(+) Net Debt, Corporate	
Corporate Debt	**- $1,541**
Cash and restricted Cash	**$421**
Construction in Progress	**$694**
Inventory and Prepaid Inventory	**$387**
Net Contracted Customer value	**$1,780**
$/sh	**$15**
Shares Outstanding	*$115*

Total Cash Flows Contracted, Undiscounted	$10,544
Next 12M Cash Inflow	$547
Next 12M Cash Flow	480
Next 12M Principal	(144)
Next 12M Interest	(175)
Cash flow after Debt Service	$161
Equity Component of Portfolio (market cap)	$1,819
(+) Outstanding Project Debt	$4,090
Implied EV	$5,870
Multiple vs N12M Cash Flow	12.2x
FcF Yield Yr1	8.0%
Average FcF Yield	10.8%
Cash flow after debt service / equity component	

Source: Company Filings, Bloomberg, & BofA Global Research

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Exhibit 4: Comps of Low Growth Renewables – NOVA's implied multiple on N12 cash flow similar to peers below.. but NOVA has (much) better growth...

An implied cash flow multiple in the 12.2x range matches other low growth portfolios in renewables

					EBITDA (Consensus) ($Mn)				EV/EBITDA			EBITDA Growth		
	Ticker	Local Currency Price	Market Cap ($Mn)	Enterprise Value ($Mn)	2022	2023	2024	2025	2023	2024	2025	2023	2024	2025
Premium Developer / Renewable Owners														
NextEra Energy	NEE	75.67	153,112	231,561	11,236	13,722	15,171	16,557	16.9x	15.3x	14.0x	22.1%	10.6%	9.1%
Brookfield Renewable Partners (USD)	BEP	30.10	14,215	57,924	2,020	2,140	2,434	2,586	27.1x	23.8x	22.4x	5.9%	13.7%	6.3%
AES	AES	22.39	14,976	41,171	3,268	4,154	5,261	6,038	9.9x	7.8x	6.8x	27.1%	26.7%	14.8%
US/CAD YieldCos														
NextEra Partners	NEP	54.52	4,847	21,126	1,728	1,979	2,287	2,501	10.7x	9.2x	8.4x	14.5%	15.5%	9.4%
Atlantica Sustainable Infrastructure	AY	25.58	2,969	7,605	797	825	871	899	9.2x	8.7x	8.5x	3.5%	5.5%	3.2%
Clearway Energy	CWEN	29.65	5,878	14,387	1,216	1,170	1,187	1,247	12.3x	12.1x	11.5x	-3.7%	1.4%	5.1%
TransAlta Renewables (CAD)	RNW	12.60	3,362	3,020	492	512	521	521	5.9x	5.8x	5.8x	3.9%	1.9%	-0.1%
Algonquin	AQN	8.31	5,676	15,273	1,239	1,213	1,297	1,388	12.6x	11.8x	11.0x	-2.1%	6.9%	7.0%
NPI	NPI	32.56	8,204	10,554	1,386	1,278	1,328	1,326	8.3x	7.9x	8.0x	-7.8%	3.9%	-0.1%
European														
EDP Renewables	EDPR	19.89	22,095	30,207	2,233	2,366	2,641	2,874	12.8x	11.4x	10.5x	5.9%	11.6%	8.8%
Neoen	NEOEN	26.94	4,478	7,592	420	528	590	716	14.4x	12.9x	10.6x	25.5%	11.8%	21.5%
Orsted (DKK)	ORSTED	608.80	37,712	45,484	4,542	3,361	3,916	4,635	13.5x	11.6x	9.8x	-26.0%	16.5%	18.4%
Solaria	SLR	14.17	1,944	2,728	152	217	274	341	12.6x	9.9x	8.0x	42.3%	26.4%	24.5%
Encavis	ECV	15.52	2,745	4,883	354	358	389	427	13.7x	12.6x	11.4x	1.0%	8.6%	9.8%
AVERAGE			20,158	35,251	2,220	2,416	2,726	3,004	12.8x	11.5x	10.5x	10.5%	10.8%	6.8%
AVERAGE (excluding Brookfield)									11.7x	10.5x	9.6x			
Average YieldCos									9.8x	9.3x	8.9x			

Source: Company Filings, Bloomberg, & BofA Global Research

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For future growth assets which refer to as NOVA's development company or "DevCo" we reset our assumed discount rate on levered cash flows to 10% (future asset-level), in lockstep with the 200bps increase to our benchmark for the operating business. We give some credit to tighter spreads cost of debt and higher advance rates for future loan securitizations given NOVA's recent Department of Energy loan announcement. We assume a 25bps benefit on cost of debt (5.75%) vs our long term 6% assumption and an 80% advance rate vs 75% historically and closer to 70% against recent issuances. We assume this reverts back to normal trends in 2026 as this source of government capital is exhausted. Beyond that, we leave the rest of our assumptions largely unchanged, but we reset the presentation of our DevCo estimates to more clearly communicate against NOVA's reported key performance indicators. We caution not to confuse this 10% with the 14% discount rate we use to risk these futures projects back to 2023 cash flows.

With that in mind, our weighted average rate of return trends towards 11.9% across all customer portfolios that now include accessory loan products as well. We compare this with an expected long-term cost of debt in our forecast at 6% for loans and 6.5% for lease / PPA securitizations, implying a spread that is on par with NOVA's long term 500bps guidance. We include an estimate of the value created from accessory loan customers in this metric as well for the first time which we conservatively assume is dilutive to returns given shorter tenor loans. Customer balances under this loan type are assumed to match closely to Home Efficiency loans issued by competitor, Goodleap, and generally triangulate towards $10-13k. We assume NOVA trends similarly to this level over time. We also continue to exclude any value from service customers, cash sales and any other gain on sale EBITDA as we view this as a buffer against equity level cash needs albeit our drag from cash overhead spend includes employees allocated to those businesses.

Exhibit 5: Resetting our DevCo (Asset Level, Levered) for NOVA to a 10% discount rate

We reset our DevCo benchmark on value creation for NOVA to a 10% discount rate for future assets. We include accessory loan customers for the first time given this was a recent development at results which adds ~$1/sh of value as positive offset (14% below discounts back future Devco periods)

Discount Rate	14%						
Year Ending	12/31/2023	12/31/2024	12/31/2025	12/31/2026	12/31/2027	12/31/2028	12/31/2029
	2023	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Solar Lease / PPA							
Customers	48,717	54,954	67,632	77,776	89,443	99,004	103,245
MW added	361	385	473	544	626	693	723
Unlevered IRR Solar	12.8%	13.8%	14.8%	14.4%	14.0%	13.9%	13.7%
Unlevered IRR Storage	8.4%	4.5%	4.6%	4.4%	5.5%	5.1%	5.4%
Storage Attach Rate	30.0%	40.0%	50.0%	55.0%	60.0%	60.0%	60.0%
NPV / W Unlevered (6% Discount Rate)	$1.28	$1.22	$1.18	$1.05	$1.03	$1.00	$1.00
NPV / W Levered (10% discount rate)	$0.75	$0.78	$0.76	$0.66	$0.64	$0.62	$0.63
Value Created ($mm)	**$269**	**$300**	**$362**	**$359**	**$398**	**$432**	**$454**
Implied Multiple on Value Created (EV / Unlevered Cash Flow)	15.8x	16.7x	16.7x	16.3x	16.1x	16.2x	16.4x
Solar Loan							
Customers	40,239	38,026	38,871	44,701	51,406	56,547	59,374
MW added	306	289	295	340	391	430	451
Unlevered IRR Solar	11.1%	13.2%	13.9%	14.4%	14.4%	14.4%	14.4%
Unlevered IRR Storage	8.3%	9.2%	9.6%	9.8%	9.8%	9.8%	9.8%
Storage Attach Rate	25.0%	35.0%	40.0%	50.0%	50.0%	50.0%	50.0%
NPV / W Unlevered (6% Discount Rate)	$0.88	$1.06	$0.83	$0.68	$0.68	$0.68	$0.68
NPV / W Levered (10% discount rate)	$0.48	$0.79	$0.58	$0.41	$0.41	$0.41	$0.41
Value Created ($mm)	**$147**	**$228**	**$173**	**$139**	**$159**	**$175**	**$184**
Accessory Loan							
Customers	20,000	24,000	28,800	34,560	39,744	45,706	50,276
Assumed Customer Balance	$6,000	$8,000	$10,000	$12,000	$12,000	$12,000	$12,000
NPV per Customer (10% Discount Rate)	$399	$532	$666	$799	$799	$799	$799
Value Created ($mm)	**$8**	**$13**	**$19**	**$28**	**$32**	**$37**	**$40**
Service Customers	20,000	25,000	28,750	33,063	38,022	43,725	50,284
Cash Sales	3,633	3,633	3,997	4,596	5,286	6,079	6,079
Total Customers	**132,589**	**145,613**	**168,049**	**194,696**	**223,901**	**251,060**	**269,258**
Memo Total Solar Customers	*88,955*	*92,979*	*106,502*	*122,478*	*140,849*	*155,551*	*162,619*
Total Customer Growth		*10%*	*15%*	*16%*	*15%*	*12%*	*7%*
Blended IRR Solar Leases	12.4%	12.2%	12.6%	12.0%	12.0%	11.9%	12.0%
Blended IRR Solar Loans	10.7%	12.5%	12.9%	13.1%	13.1%	13.1%	13.1%
IRR Accessory Loans	9.8%	9.8%	9.8%	9.8%	9.8%	9.8%	9.8%
Weighted Average Return	**11.3%**	**12.0%**	**12.2%**	**11.9%**	**11.9%**	**11.9%**	**11.9%**
Total Value Generated (ex Service Customers)	**$424**	**$541**	**$553**	**$525**	**$589**	**$644**	**$679**
Less Cash G&A and SBC Opex ($mm)	($330)	($353)	($380)	($409)	($431)	($445)	($449)
Total Value Generated	**$94**	**$188**	**$173**	**$116**	**$158**	**$199**	**$229**
Discounted Value	***$83***	***$145***	***$117***	***$69***	***$82***	***$91***	***$92***
Discounted Value Created Through 2029 ($mm)	$678						
Terminal Multiple	**6.0x**						
Terminal Value (Discounted) ($mm)	$482						
Total Value	**$1,160**						
$/sh	$10						
Shares Outstanding	*115.1*						
OpCo Value Including Net Debt	$15						
Price Objective $/sh	$25						

Source: BofA Global Research estimates

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As show in the above we benchmark we now give credit to accessory loan products which have shown up in sizable numbers this quarter. We estimate that more than half of loans this quarter came from accessory loans which are non-solar and reflect far lower consumer balances (see our first takes note for details). Based on discussions with management, we assume a relatively low balance today, averaging $6k with a 10-year duration and 9.99% coupon. We benchmark these assumptions against Goodleap's Home Efficiency loans which carry similar terms. At a 10% discount rate, levered cash flows from these loans deliver a 6.7% return on cash deployed, which is equivalent to $400 per customer on a $6,000 balance.

Exhibit 6: Accessory Loan Customer Mini - Model
We use a mini model for economics on accessory loan customers. Given small balances, the uplift from accessory loans is relatively small in our valuation ($1/sh)

Loan Balance Per Customer	6000
Duration of Loan	10
APR of Loan	9.99%
CPR of Loan	5%
Debt Advance Rate (against PV-6)	70%
	$69.2
NPV 6% (Unlevered Cash Flows)	0
Interest Rate	6.5%
Debt Service Coverage Ratio	1.05x
Unlevered NPV Discount Rate	6%
Levered Discount Rate	10%

Contract Year	0	1	2	3	4	5	6	7	8	9	10
Calendar Year		**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
New Customers (Loan)	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Constant Prepayment Rate		*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
Project-level Cash Flows											
Investment in Customer Notes Receivables	(60.00)	(60)									
Total Interest Income, NR		5.67	5.01	4.34	3.67	2.99	2.29	1.57	0.83	0.23	-
(+/–) Deferred Interest		-	-	-	-	-	-	-	-	-	-
Recognized Interest Income, NR		6	5	4	4	3	2	2	1	0	-
(+) Scheduled Principal Amortization, NR		3.77	4.14	4.56	5.01	5.51	6.06	6.67	7.34	4.51	-
(+) Additional Principal Payments, NR		3	2	2	2	1	1	1	0	-	-
Total Customer Collections		**12**	**12**	**11**	**10**	**10**	**9**	**9**	**8**	**5**	**-**
(–) MSA Fees		0.5	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.0	-
Unlevered Asset Cash Flow	**(60)**	**13**	**12**	**11**	**11**	**10**	**10**	**9**	**8**	**5**	**-**
(–) Interest Expense		(3)	(3)	(2)	(1)	(1)	(0)	-	-	-	-
(–) Scheduled Amortization	48	(6)	(7)	(7)	(7)	(8)	(3)	1	0	-	-
(–) Additional Principal Payment Sweep		(3)	(2)	(2)	(2)	(1)	(1)	(1)	(0)	-	-
(–) Maintenance Capex		-	-	-	-	-	-	-	-	-	-
Levered Asset Cash Flow	**(12)**	**0**	**0**	**0**	**0**	**0**	**6**	**9**	**8**	**5**	**-**
DCF (Unlevered)	**(60)**	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**3**	**-**
Unlevered NPV	9										
Unlevered NPV/Customer	920										
DCF (Levered)	**(11.56)**	**0.43**	**0.38**	**0.33**	**0.29**	**0.26**	**3.25**	**4.63**	**3.96**	**2.02**	**-**
Levered NPV	3.99										
Levered NPV/Customer	399.35										

Source: BofA Global Research

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Summary Estimate Updates

Our estimate updates for Sunnova are relatively limited. We include the accessory loan customers that are benchmarked above in our estimate which added to our customer metrics move our FY customer additions within guidance – BofA estimate is now 132k customers vs 125-135k in the raised guide. Increased "Other" revenue from service customers in 1Q23 rebase our estimate on Adjusted EBITDA by ~$15mm on the year. We now sit broadly at the midpoint of guidance.

Exhibit 7: NOVA estimate updates post print
We update EBITDA estimates for the quarter based on increased "Other" revenue (service, etc.) in 1Q23

	FY23 Metrics			
2022 Guidance	2023 BofA Est	2023 Prior BofA Est	2023 Cons Est	FY23 Guidance
New Customer Additions	132,589	123,005	126.5	125-135

Exhibit 7: NOVA estimate updates post print

We update EBITDA estimates for the quarter based on increased "Other" revenue (service, etc.) in 1Q23

	FY23 Metrics			
Adj. EBITDA	$243	$227	237.0	235-255
P&I	$283	$276	$283	260-300
Principal	$164	$160		150-190
Interest	$119	$116		110-120

Source: Company Filings, Bloomberg, & BofA Global Research

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What about RUN? Applying the same reset

While we avoid belaboring the same points for RUN on how to deconsolidate contracted cash, given RUN routinely publishes a sensitivity valuation of unlevered contracted cash flows at different discount rates, we show that a simple sense check can be done on the operating business. In the below we back calculate a similar mock-up for contracted cash based on matching inputs as NOVA for service cost and a few points of disclosure for RUN. The only added ripple to this analysis is that RUN assumes a cost for inverter replacements every 10 years (NOVA assumes these are warrantied) which we estimate on an amortized basis (total GW subscribers * cost of replacement / average contract life). Critically, we base this analysis on rough inputs – most notably RUN's assertion of $1.1bn in recurring revenue and a 17.6 year contract life – and can get within 2% of its reported level. We see this as a worthwhile exercise given our discussions with investors suggest shares have underperformed after results given confusion on contracted cash flows.

Exhibit 8: Rough Deconsolidation of RUN's Gross Earnings Assets

We benchmark a short-hand deconsolidation based on $1.1bn of recurring revenue indicated, typical maintenance costs and weighted average contract life

Recurring Revenue	**1,100.0**
Weighted Average Contract Expiration (yrs)	17.8
SREC % of Revenue	12%
GW subscribers	**4.9**
Routine Maintenance ($/kW-yr)	25
Inverter Replacements ($ / kW)	200

Gross Earnings Assets (6% Discount Rate)
8,714

Year	Revenue	of which SREC	SREC Deflation	Routine O&M	Amortized Inverter Replacements	Project EBITDA	Tax Equity Distribution	Post Tax Equity Cash Flow
1	968.0	132.0		123	58	919.9	25%	689.9
2	977.6	132.0	0%	125	59	925.9	20%	740.7
3	987.3	125.4	5%	127	60	925.3	20%	740.2
4	997.1	119.1	5%	130	61	925.1	20%	740.1
5	1,007.0	113.2	5%	133	62	925.2	10%	832.7
6	1,017.0	104.1	8%	135	64	922.2	5%	876.1
7	1,027.1	95.8	8%	138	65	920.0	5%	874.0
8	1,037.3	88.1	8%	141	66	918.5	5%	872.6
9	1,047.6	81.1	8%	144	68	917.6	5%	871.7
10	1,058.0	32.4	60%	146	69	875.1	5%	831.4
11	1,068.5	32.4		149	70	881.3	5%	837.2
12	1,079.1	32.4		152	72	887.5	5%	843.1
13	1,089.8	32.4		155	73	893.8	5%	849.1
14	935.5	32.4		136	64	767.9	5%	729.5
15	803.1	32.4		119	56	660.4	5%	627.3
16	689.4	32.4		104	49	568.5	5%	540.0
17	591.8	32.4		91	43	489.9	5%	465.4
18	508.0	32.4		80	38	422.9	5%	401.7
19	436.1	32.4		70	33	365.6	5%	347.3
20	374.4	32.4		61	29	316.6	5%	300.8
21	321.4	32.4		54	25	274.9	5%	261.1
22	275.9	32.4		47	22	239.2	5%	227.2
23	236.8	32.4		41	19	208.7	5%	198.3
24	203.3	32.4		36	17	182.7	5%	173.6
25	174.5	32.4		32	15	160.5	5%	152.5

Source: BofA Global Research

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We show the above as an illustration, but the simpler and more elegant approach is to use a regression. We run a polynomial regression against RUN's reported sensitivity to extrapolate to value for gross earnings assets at a 9% discount rate, ultimately determining that value at $6.7bn.

While we credit non-amortizing debt at carrying value, (as RUN reports it) we discount the value of debt service payments under project debt at the same 9% discount rate. By consequence the $4.9bn of debt service payments on project debt represent just under $8bn notional value yielding a 4.3% wtd average coupon, assumed to amortize over 18 years (matching the weighted contract average). This valuation methodology matches the assessment for the operating business used for NOVA in Exhibit 3.

Exhibit 9: RUN Discount Rate Sensitivity

At a 9% discount rate for assets existing today, we benchmark $1.1bn ($5/share) in asset value which plus the value of cash ($3.50/share) yields a total PowerCo value of $8.50/share

Discount Rate	4%	5%	6%	7%	9%
Total GEA, Contracted	$9,939	$9,088	$8,343	$7,694	$6,704
Total GEA, Renewal (Lease/PPA)	$4,395	$3,606	$2,970	$2,455	$2,412
Total Gross Earning Assets	$14,334	$12,694	$11,313	$10,149	$9,116
Less Recourse Debt & Convert Senior Notes	($946)	($946)	($946)	($946)	($946)
Less Discounted Value of Debt Service	($5,190)	($5,190)	($5,190)	($5,190)	($5,190)
Pro-forma debt adjustment for debt within project equity funds	$868	$868	$868	$868	$868
Pro-forma debt adjustment for safe harboring activities	$0	$0	$0	$0	$0
Less pro forma pass-through financing	($303)	($303)	($303)	($303)	($303)
Total Debt	($5,571)	($5,571)	($5,571)	($5,571)	($5,571)
Net Earning Assets, contracted	$4,368	$3,517	$2,772	$2,123	$1,133

Source: BofA Global Research, Company Reports

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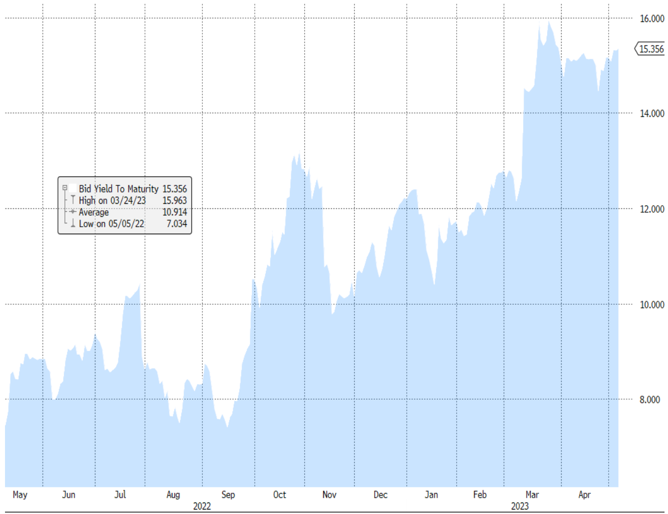
Combining this and the reset to DevCo our valuation moves our PO from $45 to $31 and with the elimination of renewal, is now only based on contracted cash flow. While we continue to see tangible upside from long term renewal prospects on contracts or any upside from future partnerships - we acknowledge that few investors are willing to discount this today and thus it's unreasonable to expect it to show up in shares. Moreover, we rebase our equity value inputs to match Sunnova (6x Terminal Multiple, 14% Ke) from 8x / 13% Ke. While we acknowledge that RUN has a far longer execution history than NOVA, the effective premium given to RUN has now largely washed out since late 2021. On the other hand, investors are keen to point to RUN's convertible note trading with a >15% Yield to Maturity at current as a fair baseline for cost of equity.

Exhibit 10: RUN Convertible Note – Yield to Maturity
RUN's convertible note is now yielding >15%, which validates a higher cost of equity assumption



Source: Bloomberg

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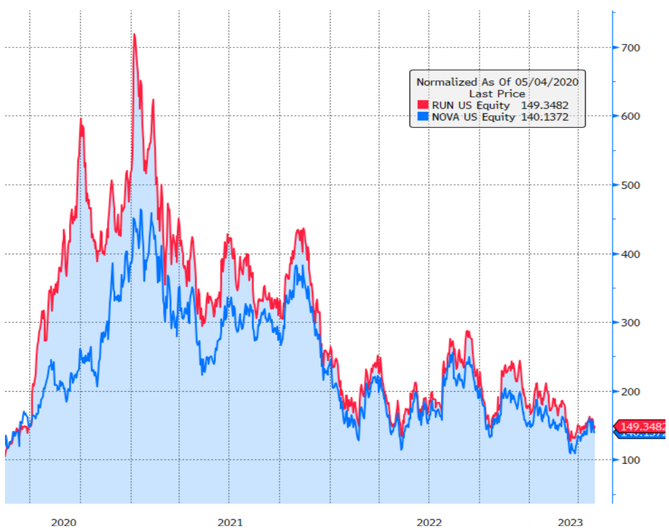
Exhibit 11: RUN v NOVA – No more Premium
SunRun has now traded in tandem with NOVA for over a year. By consequence we use a matching 6x terminal value



Source: Bloomberg

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While we do not rehash our discussion on the implied multiple for growth assets, our model foots to cash flow multiples in the 14-15x range (similar to NOVA) which again we sense check against SPWR trading 15-16x 2023 EBITDA today. The summary of all these changes foots to our new price objective at $31/share.

Exhibit 14: RUN Updated SOTP

No renewal and lower discount rates take us from $45 to $31/sh

Sunrun: Consolidated Sum of the Parts Valuation														
Power Co (Retained Lease Value) – using 9% levered discounted rate										NPV ($Mn)	Contracted Value ($/Sh)	Renewal Value Attributed	Renewal NPV ($Mn)	Renewal Value ($/Sh)
Levered FCF Contract Period - RUN (incl. VSLR)										$1,133	$5.28	0%	$0	$0.00
Total Power Co										**$1,133**	**$5.28**		**$0**	**$0.00**
	Growth Estimates and Unlevered PV-5 (NPV/W)			Levered PV-10 (Contracted) for Devco periods			Contracted Value Creation (14% discount back to today)					Renewal Value Creation (PV-10)		
Dev Co @ 14% Discount Rate	**MW Leased**	**YoY Growth**	NPV/W Unlevered PV-5	Solar	Storage	SBC & R&D	NPV ($Mn)-Pre Discount	Storage NPV - Pre Discount	*NPV % Storage*	NPV ($Mn)-Discounted	Contracted Value ($/Sh)	Renewal NPV ($Mn)-Pre Discount	Renewal NPV ($Mn)-Discounted	Renewal Value ($/Sh)
DevCo 2023: NPV (Consolidated)	889	-	*1.76*	*0.89*	*0.06*	*(0.18)*	$687	$56	*8%*	$529	$2.47	-	$0	$0.00
DevCo 2024: NPV (Consolidated)	933	5%	*1.65*	*0.81*	*0.09*	*(0.18)*	$672	$85	*11%*	$454	$2.12	-	$0	$0.00
DevCo 2025: NPV (Consolidated)	1,036	11%	*1.62*	*0.76*	*0.12*	*(0.17)*	$740	$124	*14%*	$438	$2.04	-	$0	$0.00
DevCo 2026: NPV (Consolidated)	1,150	11%	*1.65*	*0.79*	*0.14*	*(0.16)*	$878	$159	*15%*	$456	$2.12	-	$0	$0.00
DevCo 2027: NPV (Consolidated)	1,276	11%	*1.58*	*0.75*	*0.13*	*(0.15)*	$921	$163	*15%*	$420	$1.96	-	$0	$0.00
DevCo 2028: NPV (Consolidated)	1,417	11%	*1.54*	*0.74*	*0.12*	*(0.15)*	$1,002	$168	*14%*	$401	$1.87	-	$0	$0.00
										Terminal Value Multiple **6.0x**				
DevCo 2029: NPV (Consolidated)	1,573	11%	$1.46	$0.68	$0.11	($0.14)	$1,026	$172		$2,158	$10.06	-	-	$0.00
Total Post DevCo Value										**$4,855.35**	**$22.63**		**$0.00**	**$0.00**
Current Cash Balance (as of 4Q22)										**$863**	**$4.02**			
Construction in Progress (as of 4Q22)										**$799**	**$3.73**			
Net Recourse Debt (as of 4Q22)										**($861)**	**($4.01)**			
Total Equity Value Per Share										**$7,089.56**	**$31.65**		**$0**	**$0.00**
Equity Value Summary									**% Storage**		**Contracted**	**Net Cash**	**Renewal**	**Total**
Total PowerCo Value (Incl. Renewal) + Net Cash											**$5.00**	**$3.73**	**$0.00**	**$8.50**
Total DevCo Value								**$4,855**	**11%**		**$22.63**		**$0.00**	**$22.50**
Total Equity Value Per Share (Contracted & Renewal)														**$31.00**
Share Count														*214.5*
Assumed Discount Rate on DevCo NPVs			**14.0%**											

Source: BofA Global Research

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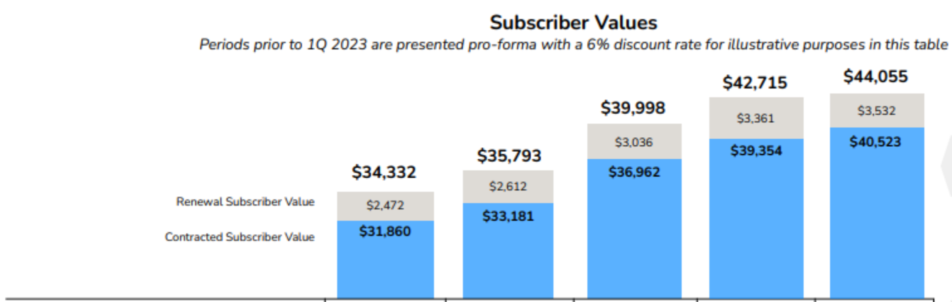
Estimate Updates Summary

We briefly update estimates for RUN post quarter noting that beyond the reset we present here, RUN had yet another solid print. 240MW of customer adds was well in excess of guidance (215-225MW) with RUN's quarterly benchmark on customer margins ("Net Subscriber Value") coming in ~20% ahead of expectations on a 6% discount rate benchmark. By consequence, we raise our growth expectations to the high end of guidance (10-15%) from 12% prior maintaining expectations for a softer 5% growth year in 2024. We emphasize this now screens particularly conservative as RUN is seemingly flagging limited issues transitioning customers to a NEM 3.0 savings proposition, with California risks primarily weighing our 2024 growth outlook. On margins, we update estimates based on the 1Q23 baseline of $12k and expect that guidance for "material" expansion in the 2nd half of 2022 hinges on both lower creation cost, and higher storage attach rates. We underwrite to mid-20% attach rates on storage by exit 2023 from 15% today which is maintained from our past update.

Critically, the upward trend on gross subscriber value against lower cost inputs further support RUN's ability to operate without needing to pull in external capital which is a consistent but frankly misguided bear thesis. We reiterate that despite the cost of capital pressures throughout 2023, RUN's blended advance rate has put it in a position where it still requires no equity against upfront creation cost. We continue to see this as the case and have upfront cash generation throughout the balance of 2023 and beyond. We further emphasize this as an underappreciated nuance of the business relative to the perceived duration risk on RUN's cash flows and more limited residual value in the contracted, noting a significant portion of its return is immediate. We rebase our outlook for margins to expect $15.5k by 4Q23 as material on falling cost and higher storage.

Exhibit 15: RUN is still generating upfront cash

Comparing cost against upfront proceeds, RUN still generates cash despite advance rates lower by 10-25%



	1Q 2022	2Q 2022	3Q 2022	4Q 2022	1Q 2023
Approximate Cumulative Advance Rate[1] on Contracted Subscriber Value during period (6% discount rate)	~100-105%	~90-100%	~80-90%	~80-90%	~80-90%
Approximate Proceeds Raised[2] (Advance Rate x Contracted Subscriber Value)	~$33,000	~$31,800	~$31,600	~$33,600	~$34,400
Creation Cost[3]	($29,863)	($30,802)	($30,187)	($29,757)	($32,055)

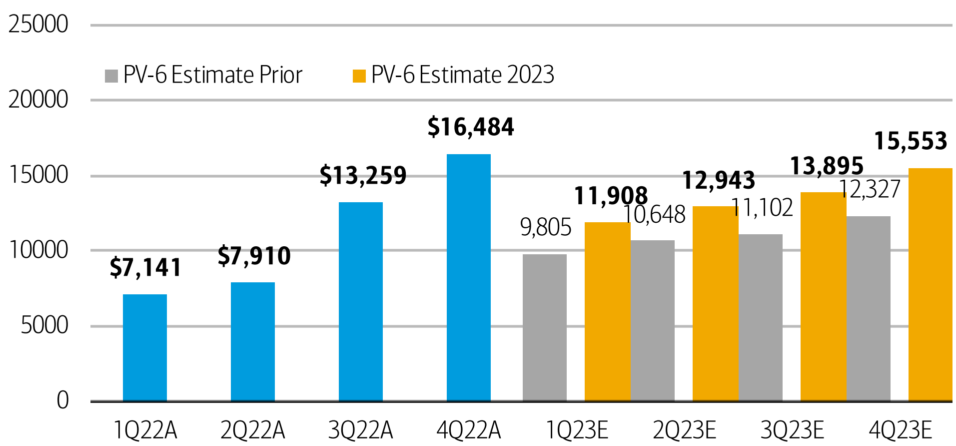
Presented pro-forma at 6% discount rate for illustrative purposes[4]

Source: Company Reports

BofA GLOBAL RESEARCH

Exhibit 14: Updated Net Subscriber Value Expectations

With lower creation cost and more storage, we see a path to $15.5k NSV by YE exit



Source: BofA Global Research

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Exhibit 17: Summary of Returns

The below summarized latest expected returns by year and the NPV under various discount rates – we stress fundamentally unlevered IRRs remain strong at 12-13%. Including uncontracted piece adds +1%

IRR Benchmark

	2022	2023	2024	2025	2026	2027	2028	2029
Unlevered IRR	11%	13%	13%	13%	13%	13%	13%	13%
Unlevered IRR Contracted	9%	12%	12%	12%	12%	12%	12%	12%
Unlevered Profitability, $/W								
PV-5 / W	1.56	2.19	2.04	1.99	2.02	1.94	1.89	1.81
PV-7 / W	0.84	1.74	1.62	1.23	1.26	1.20	1.17	1.11
PV-8 / W	0.57	1.04	0.96	0.93	0.97	0.92	0.90	0.84
Cost of Debt	5.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
Levered Profitability, $/W								
PV-5 / W	1.48	1.88	1.75	1.70	1.73	1.66	1.62	1.54
PV-7 / W	1.25	1.64	1.53	1.49	1.52	1.46	1.42	1.35
PV-10 / W	0.49	0.82	0.77	0.77	0.81	0.76	0.74	0.68

Source: BofA Global Research

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Price objective basis & risk

Sunnova Energy (NOVA)

We arrive at our $25/share price objective as follows. We value the PowerCo portion of the company by taking NPV of Net Customer Value (excl. Net Cash), equivalent to discounting cash flows from the existing asset base by a 9% discount rate. This equates to $15/sh.

We value expected future installed assets through 2029 on a DCF basis with value created from those cash flows discounted by 10% for leases and loans to the year of installation. We then discount that value to the present at a 14% cost of equity assumption. Including a 6x terminal value multiple on 2029E NPV and the NPV of G&A expense, including non-cash SBC costs and future expected corp capital needs, this equates to $10/sh.

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.

SunRun (RUN)

We arrive at our $31.00/share price objective in two pieces: PowerCo ($8.50) which is the DCF of existing home contracts benchmarked against a 9% discount rate & DevCo which is the DCF of future years of subscribing new customers is benchmarked at a 10% discount rate ($22.50/sh)

We discount the value creation of the future years of subscribing customers at a 14% discount rate and apply an 6x terminal value multiple on our 2029E NPV discounted back to 2023. We net out holding company recourse debt and cash within our PowerCo valuation.

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.

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	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
	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
	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				
	Algonquin Power & Utilities Corp	AQN	AQN US	Dariusz Lozny, CFA
	Algonquin Power & Utilities Corp	YAQN	AQN CN	Dariusz Lozny, CFA
	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
	Entergy	ETR	ETR US	Paul Zimbardo
	Essential Utilities	WTRG	WTRG US	Julien Dumoulin-Smith
	First Solar, Inc.	FSLR	FSLR 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
	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
	Southwest Gas Holdings	SWX	SWX US	Julien Dumoulin-Smith
	SunPower Corp.	SPWR	SPWR US	Julien Dumoulin-Smith

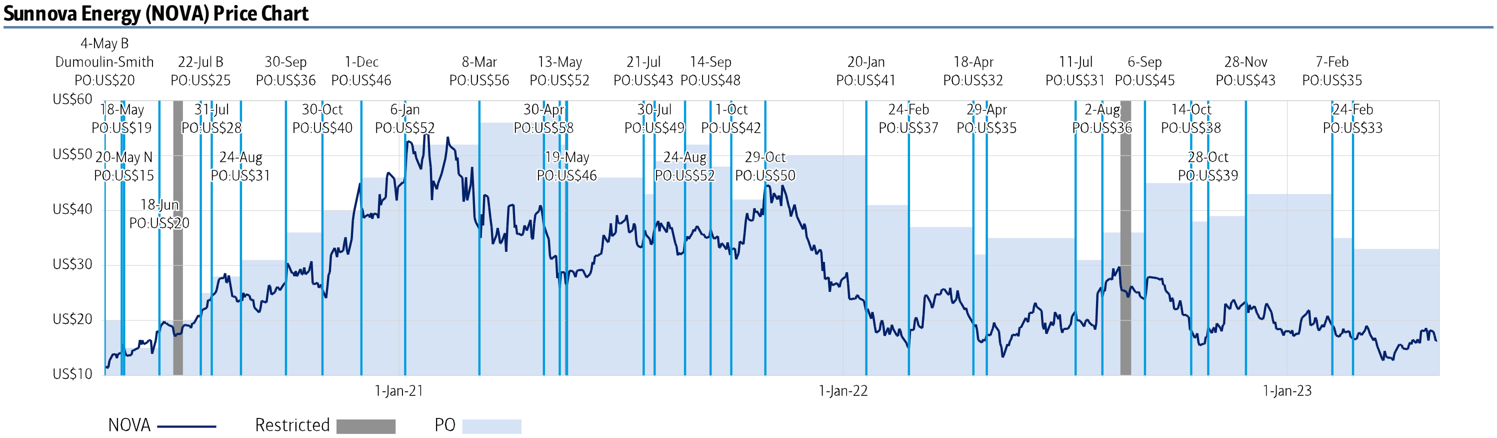
North America - Utilities and Alt Energy Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	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
	Enphase Energy	ENPH	ENPH US	Julien Dumoulin-Smith
	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
	Generac Holdings Inc.	GNRC	GNRC US	Julien Dumoulin-Smith
	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
	Stem, Inc.	STEM	STEM 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

Sunnova Energy (NOVA) Price Chart



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

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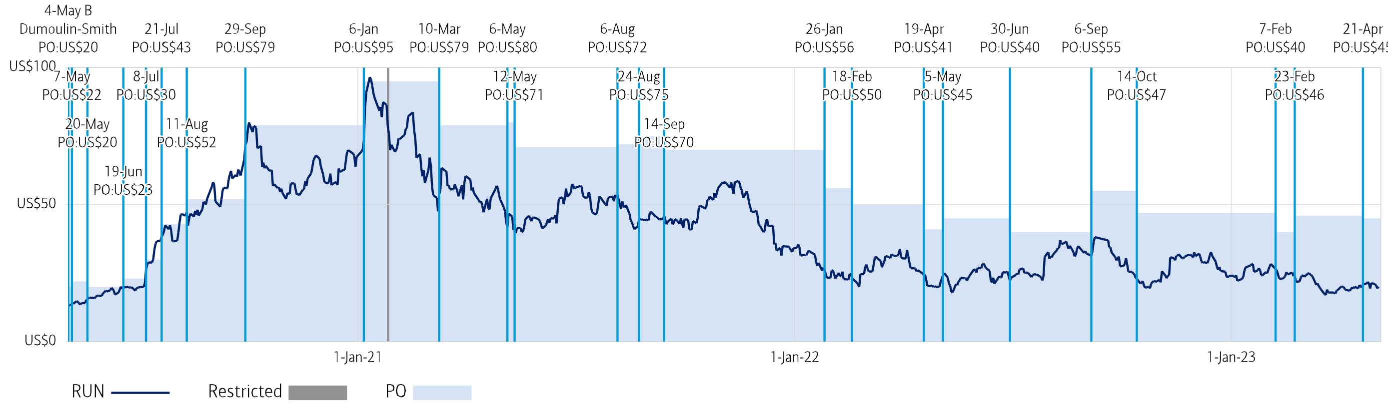
SunRun (RUN) Price Chart



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

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Equity Investment Rating Distribution: Alternative Energy Group (as of 31 Mar 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships R1	Count	Percent
Buy	11	64.71%	Buy	10	90.91%
Hold	4	23.53%	Hold	2	50.00%
Sell	2	11.76%	Sell	2	100.00%

Equity Investment Rating Distribution: Global Group (as of 31 Mar 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships R1	Count	Percent
Buy	1869	53.01%	Buy	1030	55.11%
Hold	827	23.45%	Hold	476	57.56%
Sell	830	23.54%	Sell	389	46.87%

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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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