GUIDE · 5 PAGES

Cover ratios — DSCR, LLCR and PLCR

What each one asks, worked on a 100 MW solar plant: how lenders size, sculpt and test a loan with them, and four quiet errors that flatter an LLCR.

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Lenders read a project through three cover ratios. Each sets the **cash flow available for debt service (CFADS)** against the debt, over a different window: one period, the rest of the loan, or the rest of the project. This guide shows what each one asks, works all three on one plant, explains how lenders size and test a loan with them, and lists the quiet errors that make a model's cover look better than it is.

1 One cash flow, three windows

Ratio	What it asks	How it is worked out	Mainly used for
DSCR	Can the project pay this period's debt service?	CFADS of the period ÷ the interest and principal due in it	Sculpting; the lock-up and default tests
LLCR	Can it repay the rest of the loan?	PV of CFADS from the test date to the last repayment ÷ the debt outstanding	Sizing; the shape of the loan
PLCR	Could it repay if the loan ran to the end of the project?	PV of CFADS from the test date to the end of the project's life ÷ the debt outstanding	The tail; a refinancing

The worked example below: the same cash, three windows. The dark year is the one the DSCR looks at.

CFADS = revenue − operating costs − tax paid − maintenance capex ± working capital
The loan agreement defines it. It is cash, not profit: EBITDA leaves out the tax, the maintenance and the working capital.

The LLCR and the PLCR discount each year's CFADS back to the test date at the **loan's own all-in interest rate**, and divide by the debt left after that date's repayment. Discounted at that rate, the debt itself is the present value of the debt service still to come — which is why the two ratios compare like with like.

2 Worked on a 100 MW solar plant

Assumption	Value	Assumption	Value
Plant (made up)	100 MW solar, USD 60 mn	Life after COD	25 years
CFADS, first year	USD 5.4 mn	CFADS after that	1% lower each year
Senior debt	6% all-in, 18 years	Repayment	sculpted to a 1.30x DSCR

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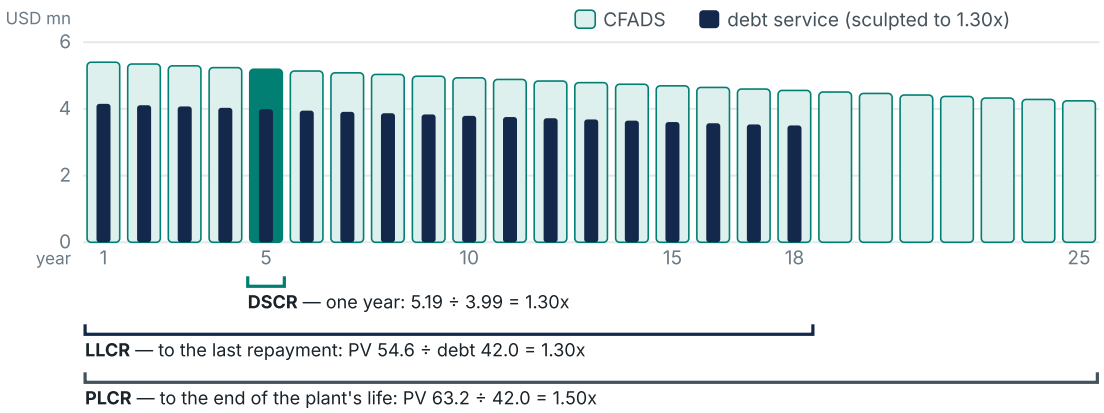

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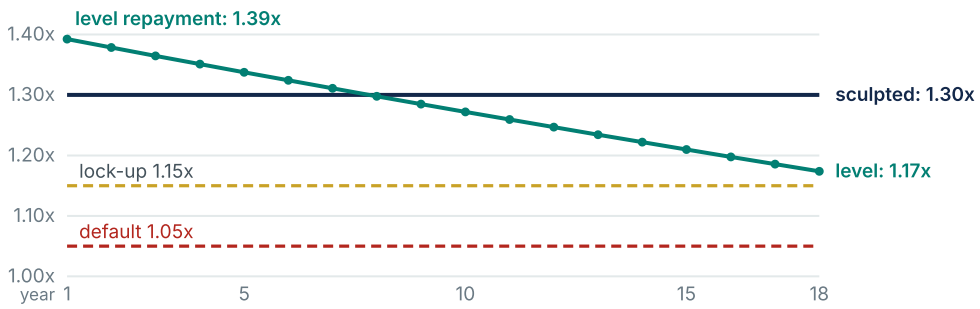
Sculpted, each year's debt service is CFADS ÷ 1.30, and the debt is the present value of that debt service at 6%: **USD 42.0 mn**, 70% of the cost. The years in the table are year ends — the test dates.

Year	CFADS	Interest	Principal	Debt service	Debt after	DSCR	LLCR	PLCR
COD	–	–	–	–	42.0	–	1.30x	1.50x
1	5.40	2.52	1.63	4.15	40.4	1.30x	1.30x	1.53x
5	5.19	2.11	1.88	3.99	33.2	1.30x	1.30x	1.65x
10	4.93	1.49	2.30	3.79	22.6	1.30x	1.30x	1.98x
15	4.69	0.74	2.87	3.61	9.5	1.30x	1.30x	3.47x
17	4.60	0.39	3.15	3.54	3.3	1.30x	1.30x	8.29x
18	4.55	0.20	3.30	3.50	0.0	1.30x	–	–
19–25	4.51 → 4.24	–	–	–	–	–	–	–

USD mn. Cash at each year end; the LLCR and PLCR on a date look at the cash after it, against the debt left after it.

Three things the example shows

- **A sculpted loan's LLCR equals its DSCR** — 1.30x on every date: the PV of the cash is 1.30 times the PV of the debt service, and at the loan's own rate that PV is the debt.
- **The PLCR is higher by the tail**: 1.50x at COD, as years 19–25 add USD 8.6 mn of present value the loan does not need. The debt falls, the tail stays, and the PLCR climbs — 8.3x in year 17.
- **The LLCR at COD does not see the shape of the repayments.** Repaid in level instalments, the same USD 42.0 mn still has 1.30x — only the debt, the cash, the rate and the last date count. The DSCR does see the shape:



The same debt repaid level: the DSCR starts at 1.39x and ends at 1.17x (average 1.28x), and the LLCR drifts from 1.30x to 1.17x. Sculpting keeps every year at 1.30x.

3 When the cash falls short

CFADS 10% lower every year

Every ratio falls in proportion: DSCR and LLCR **1.17x**, PLCR **1.35x**. The loan still pays, with less to spare.

Inverters replaced in year 10 — USD 1.5 mn, not in the plan

Year 10's CFADS falls from 4.93 to 3.43 against a debt service of 3.79: **DSCR 0.90x**; the six-month reserve (USD 2.1 mn) pays the gap. The LLCR at COD only moves to **1.28x**.

That is why lenders test the **minimum** DSCR, not the average (1.28x here), and why the maintenance plan belongs in CFADS: one bad year is a missed payment, however good the years around it. The LLCR spreads it over the loan and barely shows it.

4 Sizing, sculpting and the covenant ladder

Sizing

The debt is the smallest of what each test allows: the **gearing cap** × the cost; the **PV of CFADS ÷ the target DSCR**, for a sculpted loan; the **PV of CFADS over the tenor ÷ a minimum LLCR**, where there is one. In the example the first two agree: 70% × 60 and 54.6 ÷ 1.30 both give USD 42.0 mn. An LLCR floor of 1.35x would allow only 54.6 ÷ 1.35 = USD 40.4 mn. For solar and wind, lenders often size twice and lend the smaller amount: on the P50 output at one DSCR and on the P90 output at a lower one.

Sculpting

Debt service = CFADS ÷ target DSCR · Principal = debt service − interest

It gives the most debt for a given minimum DSCR — and leaves no slack in any year, so the cash it is sculpted on must be credible.

Covenants: a ladder, not a line

Level (illustrative)	What happens below it
1.30x sizing	The debt was sized to this. Below it the loan is not in trouble — the cushion is being used.
1.15x lock-up	No dividends: cash stays in the project until the ratio recovers (some loans then sweep it to prepay debt).
1.05x default	An event of default: the lenders may demand repayment, take the cash or step in.
1.00x	The cash does not pay the debt service; the reserve accounts and the sponsors must.

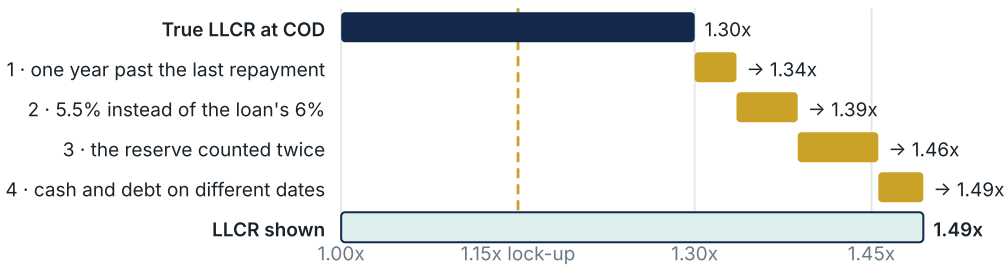
The tests are run on each test date over the **last 12 months** (look-back) and often the **next 12 months** as projected (look-forward); some loans test the LLCR as well. The levels belong to the loan agreement — the ones above are examples. Typical sizing DSCRs follow how certain the revenue is — about 1.15x–1.25x for an availability payment, 1.20x–1.35x for solar or wind under a PPA, 1.40x–1.75x with demand risk and 1.50x–2.00x for merchant prices (the guide *Modelling principles by industry* has the full table).

Where an LLCR floor is set, it is usually close to the DSCR target of the same deal — for a sculpted loan they are the same ratio. The PLCR is rarely a covenant: it is read for the **tail**, the years between the last repayment and the end of the plant's life or the concession (7 of 25 in the example), which leave room to reschedule if things go wrong. The reverse matters too: a DSCR far above the target is not strength but debt the project could carry and does not — a lower equity return.

5 Four quiet errors that flatter the LLCR

These four raise no error flag and leave the balance sheet balancing, so the usual checks pass. Each one lifts the LLCR a little. Here each is applied alone to the example, whose LLCR at COD is 1.30x:

The error	What the model does	LLCR	The check
1 · Cash past the last repayment	The window runs one year past the loan's maturity — a project-life flag, or one period too many	+0.04x	The window ends on the last repayment date in the loan agreement
2 · The wrong discount rate	5.5% — a rate typed in, or another period's margin — instead of the 6% the loan agreement sets	+0.05x	The rate built as the definition reads; for a floating loan, the hedged rate
3 · A reserve counted twice	The DSRA balance (USD 2.1 mn) added on top, and its release also left inside year 18's CFADS	+0.07x	A reserve once, as the definition says, or not at all — never in CFADS as well
4 · Cash and debt on different dates	CFADS discounted from mid-year while the debt balance is taken at the year end	+0.04x	The cash, the balance and the discounting all to the same test date



The four together, applied one after another: an LLCR of 1.49x shown for 1.30x true. Against a 1.15x lock-up, the headroom looks like 0.34x; it is 0.15x.

More places the cover goes wrong

- **EBITDA in place of CFADS** — the tax, the maintenance capex and the working capital left out.
- **A tail that is not there** — a PLCR over a life the plant or concession will not have, or merchant cash counted as contracted.
- **The sizing case and the covenant case mixed** — the P90 sizing read against the P50 base case, or the target DSCR read as the covenant.
- **Ratios typed in** — a cover ratio on an output sheet that does not trace back to the cash flow and the debt schedule.

The cure is a reconciliation: rebuild the LLCR on one test date by hand — the CFADS, the discount factors, the debt balance — and it must match the model to the second decimal.

In Project Finance Studio: Output › Ratios shows the DSCR of every period and over the last 12 months, and (in Advanced) the LLCR and the PLCR — at the senior debt's all-in rate, from the period after the test date, with no reserve added. The loan is sized on a target DSCR with an optional LLCR floor; the lock-up, its near-miss alert and the default covenant are inputs. Trace shows every number behind them; the FAST workbook has the same lines as live formulas.

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