

US Data-Centre Construction Debt before Final Utility Energisation

An Evidence-Gated Framework for Drawdowns, Completion Tests, Bridge Power and Downside Liquidity

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Abstract

Construction debt for a US data-centre project can be fully committed before the utility has completed every network upgrade, substation work, protection test and operating approval required for final energisation. The building can advance faster than the grid. Long-lead electrical equipment can arrive before the interconnection path is final. Bridge generation can support commissioning or limited operations while carrying fuel, emissions, capacity and reliability constraints. A customer contract can contain delivery dates that precede dependable utility service. These timing differences create a financing problem: each draw increases funded exposure while the principal source of repayment remains conditional on events outside the borrower's direct control.

This paper develops a US Pre-Energisation Construction-Debt Framework for lenders, sponsors, developers, customers and transaction advisers. It converts land, permits, utility studies, interconnection and construction agreements, network upgrades, bridge power, equipment procurement, commissioning, customer acceptance and permanent financing into an evidence-gated drawdown sequence. It distinguishes mechanical completion from utility energisation, customer-ready service and financial completion. The framework links sources and uses, cost to complete, sponsor equity, independent-engineer certification, contingencies, interest reserves, debt-service coverage, covenants and downside recovery.

The worked case is wholly hypothetical. A 96 MW customer-usable campus is developed in two phases. Total project cost is USD 1.44 billion, financed with USD 720 million of construction debt and USD 720 million of sponsor equity. Final utility energisation is scheduled for month 30. A temporary 36 MW bridge-power system supports commissioning and a limited initial service profile. The case assumes a 12-month committed delay facility, a USD 118 million interest and operating reserve, a USD 144 million contingency and a minimum forward debt-service coverage test of 1.35 times before conversion. The central case repays construction debt through permanent financing after final energisation and customer acceptance. The delay case requires additional equity and reserve use. The severe case stops draws and preserves completion or enforcement alternatives. These figures do not describe an identified project, utility, lender or transaction.

The analysis concludes that utility progress should be treated as a chain of distinct rights, works, tests and approvals rather than one expected date. Draws should remain conditional on evidence that the budget is balanced, remaining funds are sufficient, sponsor support is available, grid milestones are current, bridge power is legally and operationally usable, customer obligations are aligned and the completed asset can refinance under stressed timing. The credit decision should show funded exposure at every milestone, the liquidity required for delay and the recovery path if final energisation does not occur on schedule.

JEL Classification: G21, G28, G31, G32, L86, L94

Keywords: US data centres, construction debt, utility energisation, grid interconnection, bridge power, completion tests, drawdowns, debt service coverage, project finance, large loads

1. Define the credit decision

The decision question is which funded exposure is acceptable before final utility energisation and which evidence must precede each draw. The evidence record should begin with project perimeter, capital structure, grid path, construction schedule, customer commitments, bridge power and takeout plan. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [1][2]

The principal failure is that construction progress can be mistaken for repayment readiness when grid service remains conditional. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to define the funded-risk limit, evidence gates, stop-draw events and recovery objective before commitment. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

2. Adopt a grid-milestone dictionary

The decision question is how request, study, facilities agreement, network work, backfeed, commissioning and final service are distinguished. The evidence record should begin with utility and system-operator tariffs, studies, agreements, notices, designs, invoices and test protocols. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [3][4]

The principal failure is that one energisation date can conceal legal, engineering and operational steps with different owners and dependencies. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to approve one milestone register with exact evidence, owner, predecessor, forecast and consequence. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

Figure 1. Proposed utility-evidence and drawdown chain



Debt exposure should rise only when evidence, remaining funds and recovery remain aligned

Analytical framework; executed utility and finance documents control each gate.

Table 1. Grid-milestone evidence dictionary

Milestone	Minimum evidence	Financing use
service request	accepted application and scope	initial feasibility
study result	issued study and required upgrades	budget and schedule
facilities agreement	executed obligations and payments	enforceable project path
network works	design, procurement and progress	draw cap
backfeed	written authorisation and test conditions	commissioning only
final service	operating approval and delivered capacity	completion and conversion

Proposed definitions; utility and system-operator documents control treatment.

3. Fix the legal and physical perimeter

The decision question is which entities, land rights, utility rights, permits, equipment, contracts and accounts support the loan. The evidence record should begin with title, leases, easements, permits, entity records, utility documents, equipment contracts and insurance. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [5][6]

The principal failure is that valuable rights or equipment can sit outside the collateral group or expire before completion. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to map each asset and right to legal holder, location, security, transfer and expiry. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

4. Define borrower and security architecture

The decision question is which borrower, guarantor, collateral, account control, assignment and step-in rights support repayment. The evidence record should begin with organisational documents, security instruments, depositary arrangements, material contracts and legal opinions. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [7][8]

The principal failure is that a lender can fund project value without enforceable control over the rights needed to finish or transfer it. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to bind land, contracts, equipment, accounts, insurance and sponsor support to an enforceable security package. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

5. Rebuild sources and uses

The decision question is how land, design, utility, network, equipment, construction, financing, reserves and contingencies are funded. The evidence record should begin with executed contracts, budgets, invoices, utility estimates, financing terms and sponsor evidence. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [7][9]

The principal failure is that a headline project cost can omit utility upgrades, escalation, financing carry, bridge power or owner costs. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to reconcile every use to committed debt, funded equity, remaining equity and documented contingency. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

Table 2. Sources-and-uses controls

Use	Required evidence	Principal control
land and rights	title, lease and easement	collateral and transfer
utility and network	executed agreement and estimate	milestone reserve

Use	Required evidence	Principal control
equipment	contract, title and inspection	vesting and assignment
construction	certified work and lien waiver	supervised disbursement
financing cost	debt model and invoices	interest reserve
contingency	risk register and approval	controlled release

Proposed control schedule; transaction documents determine eligibility.

6. Prove cost to complete

The decision question is whether undrawn debt, remaining equity, contingency and recoveries cover all remaining obligations. The evidence record should begin with quantity survey, independent-engineer report, committed contracts, change orders, forecast and claims. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [7][10]

The principal failure is that percentage complete can appear healthy while remaining funds are insufficient for the critical path. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to run a monthly balanced-budget test before every advance. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

7. Sequence sponsor equity

The decision question is when sponsor cash, land value, subordinated funding and contingency support enter before or alongside debt. The evidence record should begin with bank statements, escrow, contributed assets, funding notices and subordination agreements. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [7][11]

The principal failure is that nominal equity can consist of revalued land or future commitments that do not absorb current overruns. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to define eligible equity, evidence cash contribution and require replenishment when the budget becomes unbalanced. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

8. Design drawdown gates

The decision question is which conditions, certifications, lien controls and milestone tests permit each construction advance. The evidence record should begin with draw request, invoices, inspection, title update, lien waivers, budget and covenant certificate. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [7][12]

The principal failure is that uncontrolled draws can increase exposure faster than verified value and completion certainty. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to tie each advance to completed work, clean title, current budget, remaining funds and grid progress. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

Table 3. Proposed drawdown gate

Gate	Evidence	Stop-draw trigger
budget	balanced sources and uses	funding shortfall
progress	engineer-certified work	material variance
title	search, waiver and security	lien or ownership gap
grid	current milestone evidence	delay or scope change
customer	aligned delivery and acceptance	termination or credit event
liquidity	reserve and equity support	minimum cash breach

Proposed lender control; actual conditions require negotiated documents.

9. Use independent technical certification

The decision question is which engineer, utility and specialist evidence verifies design, progress, cost and performance. The evidence record should begin with appointment scope, reports, inspections, test results, qualifications and conflicts. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [9][13]

The principal failure is that borrower reporting can combine forecast and observed progress without independent challenge. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to define reliance, materiality, site access, testing and exception escalation in the engineer mandate. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

10. Verify utility and system-operator evidence

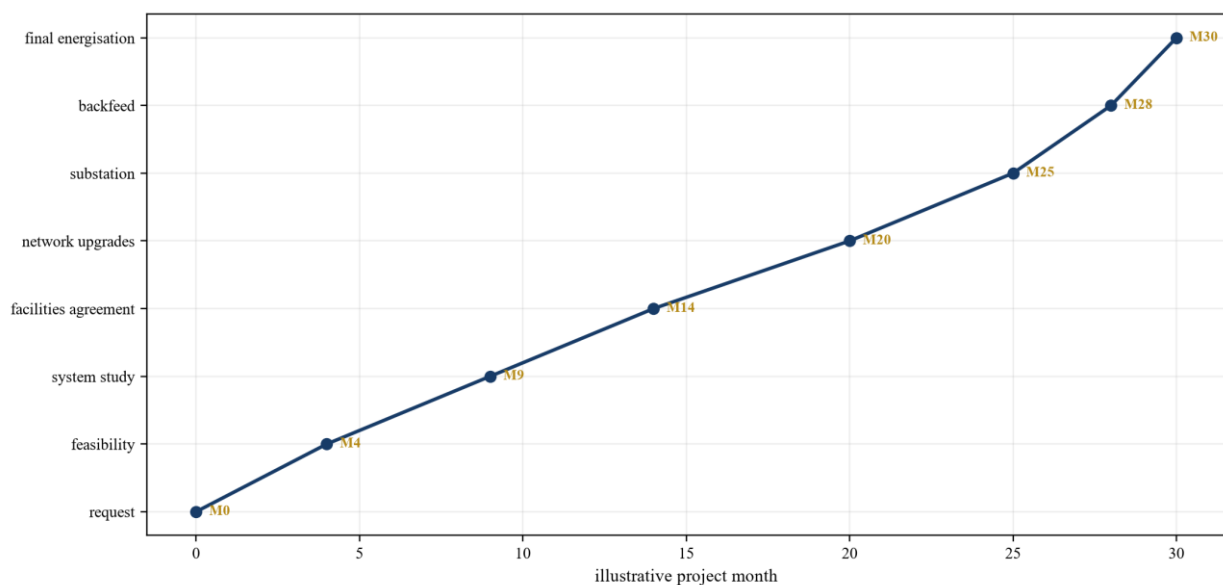
The decision question is which studies, agreements, payments, works and approvals support the scheduled service. The evidence record should begin with executed utility documents, queue status, study results, upgrade plan, invoices, correspondence and tariff. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [2][3]

The principal failure is that a forecast service date can be quoted without an enforceable delivery obligation or completed dependencies. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to separate rights, estimates, works, acceptance and operating permission in the grid schedule. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

Figure 2. Proposed grid-milestone map



Analytical framework; actual sequence varies by utility, system operator and project.

11. Diligence bridge power

The decision question is whether temporary generation and storage can lawfully, reliably and economically support the planned load. The evidence record should begin with permits, emissions, fuel, interconnection, equipment, redundancy, operating plan, contracts and test evidence. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [14][15]

The principal failure is that temporary power can be modelled as firm utility service while capacity, duration, fuel or permits are constrained. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to limit eligible service to verified bridge capability and price every operating and replacement obligation. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

Table 4. Bridge-power diligence

Dimension	Evidence	Cash consequence
capacity and duration	tested output and operating limits	eligible service load
fuel	supply, storage and logistics	variable cost and interruption
emissions and permits	approvals and monitoring	operating constraint
redundancy	topology and failover test	customer service risk
interconnection	protection and utility consent	lawful operation
exit	demobilisation and restoration	residual cost

Proposed checklist; permits and executed contracts determine usable capacity.

12. Align customer contracts

The decision question is how delivery dates, capacity ramps, acceptance, credits, termination and payment depend on power readiness. The evidence record should begin with executed customer contracts, technical schedules, notices, deposits, acceptance and pipeline evidence. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [16][17]

The principal failure is that contracted megawatts can fail to create cash when conditions, fit-out or utility service remain unmet. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to map every customer obligation to facility, power, commissioning and billing milestones. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

13. Control the construction schedule

The decision question is which civil, electrical, mechanical, utility, network and customer paths determine completion. The evidence record should begin with baseline schedule, critical path, progress, procurement, change control, interfaces and recovery plan. Each item should carry a source, date, legal

holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [9][18]

The principal failure is that separate schedules can hide shared dependencies and float consumption. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to maintain one integrated schedule with logic, ownership, float and lender-approved recovery thresholds. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

14. Manage long-lead equipment

The decision question is which transformers, switchgear, generators, UPS, cooling and control components constrain the path. The evidence record should begin with purchase orders, vendor drawings, manufacturing status, inspections, logistics, warranties and spares. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [5][19]

The principal failure is that payments can precede delivery while substitution, delay and title remain unresolved. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to use vesting, inspection, insurance, storage, assignment and milestone payment controls. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

15. Define energisation and commissioning tests

The decision question is which backfeed, protection, load, failover, integrated-system and utility tests prove usable service. The evidence record should begin with test scripts, witnesses, results, defects, utility authorisation and retest records. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [3][13]

The principal failure is that equipment completion can be recorded before the system safely delivers the contracted service. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to define objective test thresholds and block release until exceptions are closed or protected. Management estimates can support scenarios when they remain clearly identified as

assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

16. Separate completion tests

The decision question is how mechanical, substantial, utility, customer and financial completion differ. The evidence record should begin with construction contract, utility documents, customer acceptance, operating record and financing terms. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [7][16]

The principal failure is that one completion certificate can trigger conversion despite unresolved grid, customer or cash conditions. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to use separate tests and specify the consequence of each. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

Table 5. Completion-test hierarchy

Test	Evidence	Typical consequence
mechanical completion	installed systems and punch list	testing permitted
utility energisation	authorised delivered capacity	grid operation permitted
integrated commissioning	witnessed failover and load tests	facility serviceability
customer acceptance	contract test and sign-off	billing begins
financial completion	coverage, reserves and no default	debt conversion
final completion	defects closed and obligations satisfied	retention release

Proposed hierarchy; finance and project documents control consequences.

17. Build the debt-service case

The decision question is how construction interest, operating ramp, customer cash and permanent debt create coverage. The evidence record should begin with draw schedule, interest, reserve, operating model, customer billing, tax and takeout terms. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [20][21]

The principal failure is that a stable-state DSCR can hide weak coverage during ramp and delay. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to calculate monthly cash and forward coverage through the full construction and conversion period. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

18. Size interest and operating reserves

The decision question is which interest, fees, operating loss, fuel, maintenance and delay costs require funded liquidity. The evidence record should begin with debt terms, draw model, bridge-power cost, staffing, customer ramp and downside schedule. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [7][20]

The principal failure is that reserves can cover scheduled interest while omitting operating burn and utility delay. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to size reserves to a coherent delay case and control every release. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

19. Set contingency and overrun support

The decision question is how design maturity, procurement, utility scope, claims and schedule affect required protection. The evidence record should begin with risk register, cost plan, contract form, bids, changes, insurance and sponsor capacity. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [7][9]

The principal failure is that a percentage contingency can be consumed by known scope gaps before genuine unknowns occur. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to separate allocated and unallocated contingency and require timely equity cure. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

20. Design covenants and stop-draw events

The decision question is which budget, schedule, utility, customer, liquidity and technical failures require intervention. The evidence record should begin with facility agreement, reporting, certificates, model, milestones and cure rights. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [7][12]

The principal failure is that financial covenants alone can react after technical value has already deteriorated. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to use forward-looking milestone, cost-to-complete, liquidity and customer tests. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

21. Govern liquidity during delay

The decision question is how cash, reserves, equity, insurance, claims and curtailment support a delayed project. The evidence record should begin with account balances, funding commitments, forecast, invoices, fuel contracts and downside actions. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [20][22]

The principal failure is that a profitable completed project can fail because liquidity expires before utility service arrives. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to maintain a rolling minimum-liquidity forecast with committed actions and decision dates. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

22. Apply the hypothetical financing case

The decision question is how a USD 1.44 billion project and 50:50 debt-equity structure behave across grid milestones. The evidence record should begin with the stated hypothetical cost, capacity, bridge-power, reserve, contingency and timing assumptions. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [1][7]

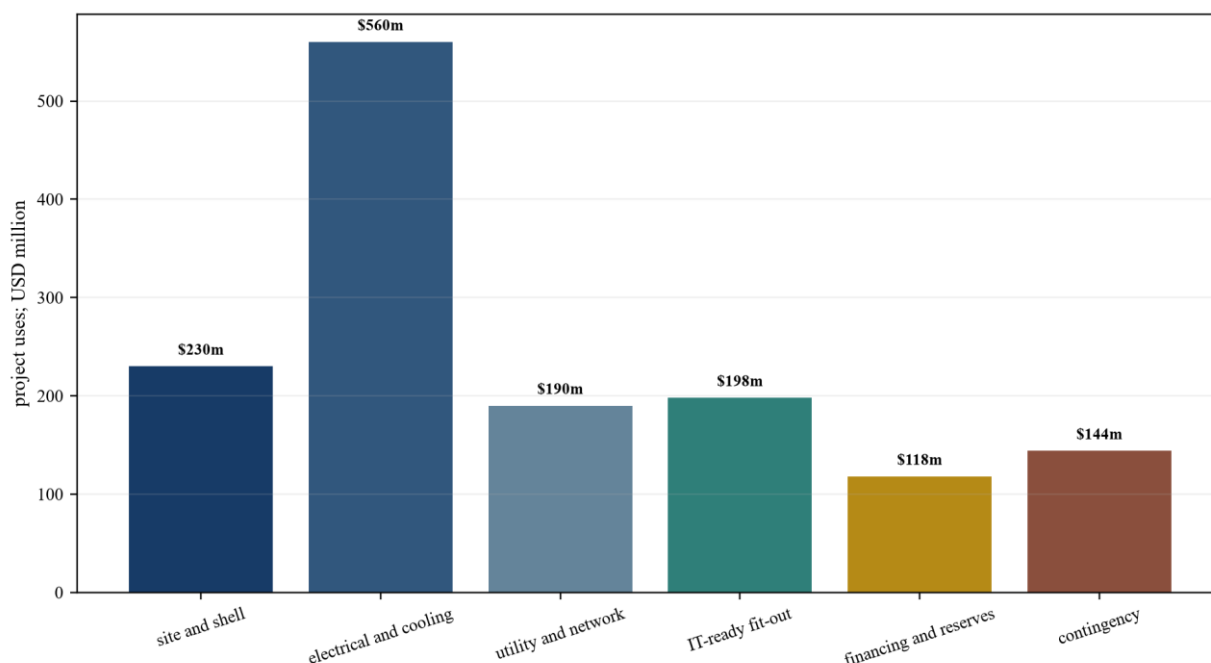
The principal failure is that one base case can conceal exposure growth and sponsor funding needs during delay. This matters because construction debt converts each advance into funded exposure before stable

operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to show sources, uses, monthly draws, remaining funds, grid evidence and takeout under each case. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

Figure 3. Hypothetical sources and uses



Wholly hypothetical USD millions; figures do not describe an identified project.

Table 6. Hypothetical financing case

Metric	Central assumption	Delay or range
customer-usable capacity	96 MW	72-96 MW
total project cost	USD 1.44bn	USD 1.44bn-1.61bn
construction debt	USD 720m	capped at USD 720m
sponsor equity	USD 720m	USD 720m plus cures
final utility energisation	month 30	month 36-48
bridge-power capacity	36 MW	24-36 MW
interest and operating reserve	USD 118m	USD 118m plus equity
contingency	USD 144m	controlled release
conversion DSCR	1.35x	1.20x-1.35x

Wholly hypothetical; figures do not describe an identified project or financing.

23. Map drawdowns to grid milestones

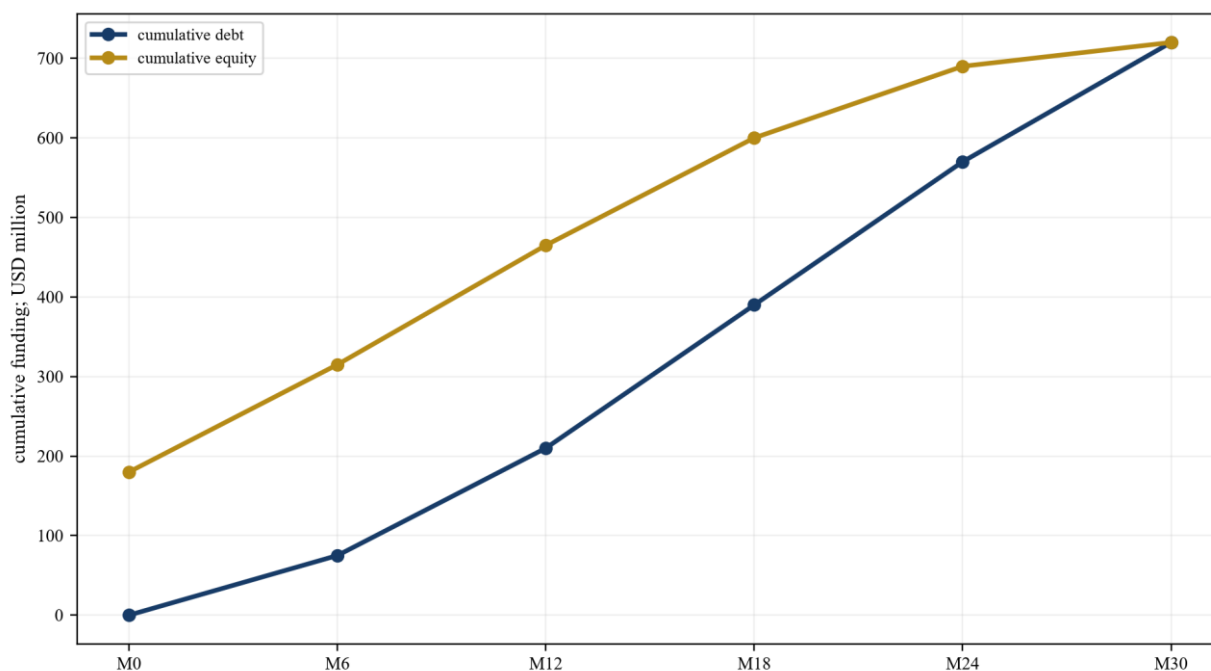
The decision question is how debt exposure increases as land, equipment, construction and utility evidence mature. The evidence record should begin with hypothetical draw schedule, grid register, engineer certificates and sponsor funding. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [3][10]

The principal failure is that drawn debt can approach commitment while final utility works remain outside lender control. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to cap cumulative draws at evidence-weighted milestone limits. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

Figure 4. Hypothetical construction-debt draw profile



Wholly hypothetical USD millions; figures do not describe an identified financing.

24. Stress energisation delay

The decision question is which combinations of delay, cost overrun, bridge-power cost, customer credits and higher rates impair repayment. The evidence record should begin with scenario model, utility evidence, construction forecast, contracts, liquidity and takeout terms. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [20][22]

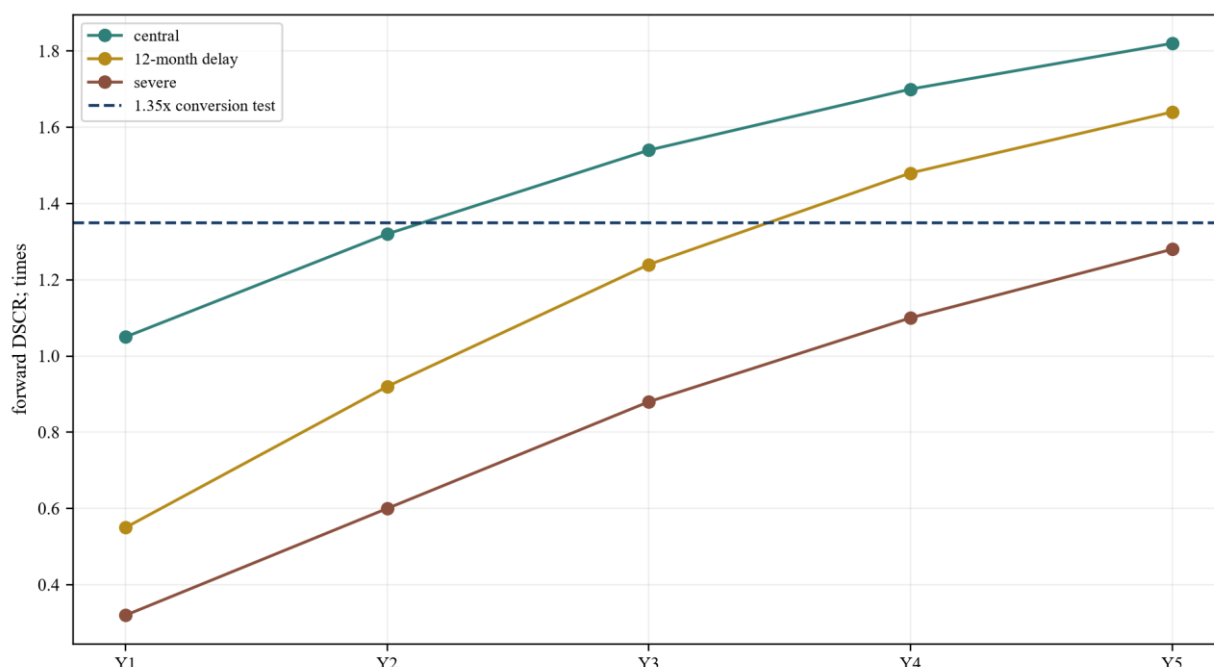
The principal failure is that single-variable sensitivities can miss compounding delay and cash effects. This matters because construction debt converts each advance into funded exposure before stable

operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to run coherent six, twelve and eighteen-month delay cases with stated management actions. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

Figure 5. Hypothetical forward debt-service coverage after energisation



Wholly hypothetical; coverage is shown for central, twelve-month delay and severe cases.

25. Plan downside recovery

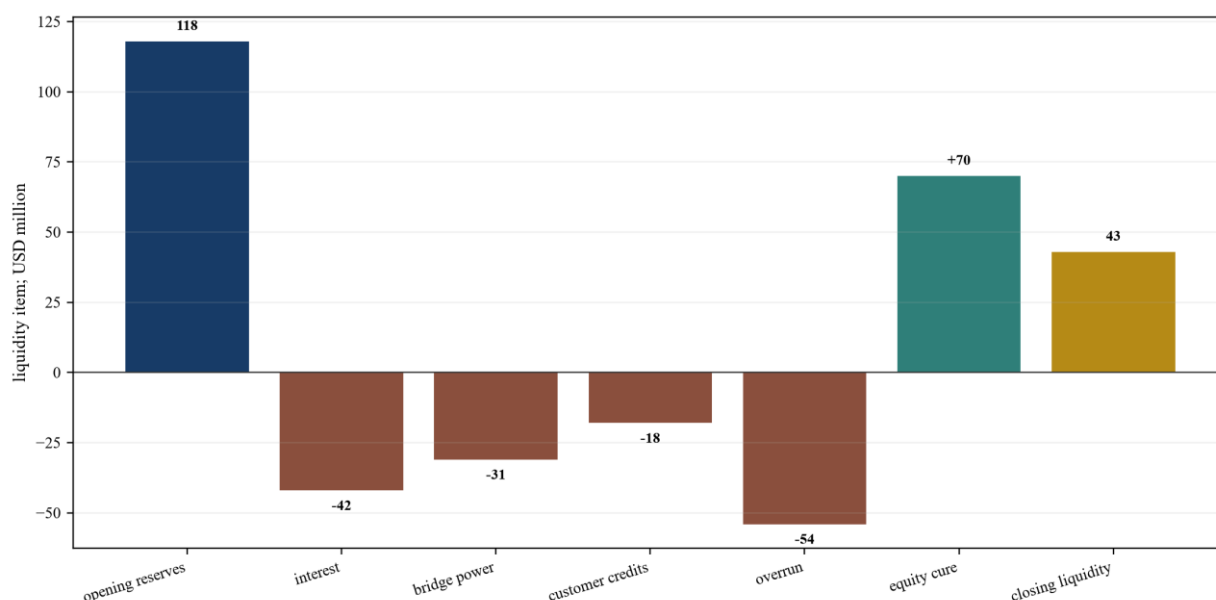
The decision question is whether completion, sale, step-in, mothballing or enforcement preserves the highest recoverable value. The evidence record should begin with collateral, contracts, remaining cost, marketability, permits, utility rights and specialist advice. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [7][23]

The principal failure is that book value can overstate recovery when incomplete works and grid rights require more capital. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to estimate net recovery by route, time, cost and execution probability. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

Figure 6. Hypothetical downside-liquidity bridge



Wholly hypothetical USD millions; this is not a financing recommendation.

26. Define permanent-financing conversion

The decision question is which utility, construction, customer, operating and coverage conditions permit takeout. The evidence record should begin with commitment, completion tests, operating history, valuation, title, insurance and covenant certificate. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [7][21]

The principal failure is that a takeout can be assumed before its conditions and expiry align with construction reality. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to treat permanent debt as conditional until every material conversion requirement is evidenced. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

27. Translate diligence into finance documents

The decision question is which condition, representation, covenant, reserve, guarantee and remedy allocates each risk. The evidence record should begin with diligence findings, model, engineer report, utility documents, customer contracts and draft facility. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [7][12]

The principal failure is that material dependencies can remain in the credit paper without becoming enforceable controls. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to attach each dependency to a document term, evidence item, owner and deadline. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

28. Reach the credit decision

The decision question is whether evidence-gated draws, funded delay liquidity, completion protections and recovery justify commitment. The evidence record should begin with grid register, balanced budget, sponsor support, customer schedule, downside cases and legal package. Each item should carry a source, date, legal holder, responsible party and reconciliation status. Market demand and national policy provide context. Executed project documents determine rights, timing, cost and cash. [1][24]

The principal failure is that the strategic value of AI infrastructure can displace project-specific repayment and recovery evidence. This matters because construction debt converts each advance into funded exposure before stable operating cash exists. The model should expose the dependency, the observable event that confirms or rejects it and the cash consequence of delay or failure.

The recommended response is to approve a commitment and draw profile tied to verified milestones and funded downside actions. Management estimates can support scenarios when they remain clearly identified as assumptions. The base case should retain only evidenced rights, committed funding and costed obligations. The downside should combine related construction, grid, customer and financing risks.

The credit committee should record funded exposure, value at risk, remaining cost, available liquidity, the earliest warning indicator and the intervention available before the next draw. This turns a forecast completion date into a governed sequence of evidence and decisions.

Table 7. Credit-committee decision record

Decision	Evidence required	Possible action
commitment	balanced budget and grid path	approve or resize
each draw	progress, title, funds and milestone	fund, defer or stop
bridge operation	permits, tests, fuel and contracts	limit eligible service
delay response	liquidity, equity and recovery	cure, restructure or enforce
conversion	energisation, acceptance and coverage	convert or extend
unresolved dependency	quantified cash and legal allocation	protect or decline

Proposed governance; transaction-specific approvals remain necessary.

Frequently asked questions

Q: Can a lender fund construction before final utility energisation? A: A lender can structure advances before final energisation when the legal, technical and financial risks are understood and controlled. The credit case should identify each utility milestone, cap funded exposure, prove remaining funds and provide liquidity and recovery options for delay.

Q: Is an interconnection agreement the same as guaranteed energisation? A: No. The agreement can define studies, facilities, payments and responsibilities while leaving construction, approvals, force majeure and operating conditions outstanding. The executed terms and completed dependencies determine certainty.

Q: What should an independent engineer certify before a draw? A: Relevant evidence includes completed work, conformity with design, budget status, remaining cost, schedule, procurement, utility interfaces, defects and whether remaining committed funds are sufficient to complete the project.

Q: How should bridge power be treated in the debt model? A: The model should limit service to verified capacity and duration and include fuel, emissions, permits, maintenance, redundancy, interconnection, customer acceptance and demobilisation. Temporary power should not be treated as equivalent to final utility service.

Q: Which completion test matters for debt conversion? A: The financing documents should specify the required combination of utility energisation, integrated commissioning, customer acceptance, operating performance, reserves, title, insurance, coverage and absence of default.

Q: How should a lender size contingency? A: Contingency should reflect design maturity, contract coverage, utility scope, procurement, escalation, claims and schedule risk. Known scope gaps should be budgeted separately so that unallocated contingency remains available for genuine uncertainty.

Q: What happens when final energisation is delayed? A: The model should quantify additional interest, operating loss, bridge-power cost, customer credits, contractor claims, reserve use and sponsor equity. Draw stops, cures, restructuring, completion and recovery actions should have defined decision dates.

Q: What is the central recovery question? A: The lender should compare the net value and execution probability of completing, selling, stepping in, mothballing or enforcing after deducting remaining cost, delay, taxes, claims and transaction expenses.

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